



SCHOOL OF
ECONOMICS AND
MANAGEMENT

Genesis of the Digital Euro:

The Relationship Between the Central Bank
Digital Currency and Data Protection Law

Christos Ioannou Naoum

DEPARTMENT OF BUSINESS LAW

Master's Thesis in European and International Trade Law

15 ECTS

HARN63

Spring 2024

Table of Contents

Abstract	5
Abbreviations	6
1 Introduction	7
1.1 Background.....	7
1.2 Purpose and Research Question	10
1.3 Delimitations	11
1.4 Methodology and Materials.....	12
1.5 Outline	14
2 Proposal for a Regulation on the Digital Euro	15
2.1 Legislative Process and General Preview.....	15
2.2 Key Concepts Related to Digital Euro Users’ Data.....	19
2.2.1 Articles 34 and 36: Processing by Payment Service Providers and Providers of Support Services	24
2.2.2 Article 35: Processing by the ECB and National Central Banks....	27
3 Relationship to Data Protection Law	30
3.1 Relevant Provisions of Data Protection Law and the EDPS-EDPB Opinion	30
3.2 Data Minimisation on Digital Euro Users	33
3.3 Purpose Limitation and Transparency of Data Processing.....	40
3.4 Lack of DPIAs and Wording Unclearity	44
4 Conclusion: Balancing Digital Euro Creation and Data Protection	47
5 Bibliography	49
6 Acknowledgments	54

Abstract

This thesis conducts a legal investigation and critical analysis of the creation and establishment of a digital currency in the transactional agora of the European Union. The implementation of the digital euro as a new method of the European numismatic zone is a revolutionary neoteric strategy for efficiency in monetary transactions. A profound problem at the epicentre of this novel concept is the mechanism of how exactly data storage and handling shall be executed by intermediaries and operators of this digital form of capital regulated by the European Central Bank which utilises the data of each individual user. The processing of this data should be in line with the General Data Protection Regulation data protection axioms, and more specifically in the case of the digital euro, the three principles of transparency, data minimisation, and purpose limitation which in combination with each other enact as the key requirements to vanguard privacy of data in the area of Central Bank Digital Currencies. Throughout this thesis, three Articles of the Proposal for a Regulation on the establishment of the digital euro addressing users' data protection are juxtaposed with the relevant data-safeguarding provisions of various adjacent and convergent General Data Protection Regulation Articles related to the triad of transparency, data minimisation, and purpose limitation, as these are the most problematic principles omitted in the attempt to lawfully create the digital euro, unveiling the existing legal challenges and the analogous antidotes to overcome data protection drawbacks.

Keywords: Digital Euro, GDPR, Data Protection Principles, CBDC

Abbreviations

CBDC	Central Bank Digital Currency
CCP	Common Commercial Policy
CJEU	Court of Justice of the European Union
DPIA	Data Protection Impact Assessment
ECB	European Central Bank
EDPB	European Data Protection Board
EDPS	European Data Protection Supervisor
EP	European Parliament
EU	European Union
EUDPR	European Union Data Protection Regulation
GDPR	General Data Protection Regulation
TFEU	Treaty on the Functioning of the European Union

1 Introduction

1.1 Background

In the epoch of digitalised agoras, the genesis of a digital euro as a new, efficient means for boosting competition, innovation,¹ and conducting everyday economic transactions will emblematically metamorphose the way in which EU citizens from a plethora of member states exchange goods and services in complementation to physical cash.² This new Central Bank Digital Currency (CBDC) initiative, which started and is to be issued by the European Central Bank (ECB) if the novel Proposal for a Regulation on the establishment of the digital euro of June 2023 is further adopted as a final rule Regulation,³ will likely be integrated with the Commission's EU Digital Identity Wallet initiative to streamline account authentication for payment procedures,⁴ and ultimately create a new dimension of monetary legal tender in EU markets,⁵ reinforcing their dynamism, based on a digital payment system which relies on a mechanism of data handling technology of users' data that raises numerous critical questions regarding data privacy in alignment with the seven safeguarding principles of Article 5 of the General Data Protection Regulation (GDPR).⁶ In particular, the obscure and opaque interaction dynamics amongst the ECB, the National Central Banks, and Payment Service Providers as intermediaries when issuing this digital capital payment system as well as other Providers of Support Services, each in their distinct roles of controllers and processors of users' data as illustrated throughout Articles 34, 35, and 36 which are the data protection clauses of the Proposal for a Regulation on the establishment of the digital euro,⁷ is at the heart of achieving the sensitive nomic balance of a digital euro payment system

¹ European Commission, 'Digital Finance: Frequently Asked Questions on the Digital Euro' European Commission Website, [https://finance.ec.europa.eu/digital-finance/digital-euro/frequently-asked-questions-digital-euro-and-legal-tender\(2024\).cash_en#:~:text=Like%20cash%2C%20the%20digital%20euro,in%20digital%20euro%20from%20consumers.\(April%2017,%202024\).](https://finance.ec.europa.eu/digital-finance/digital-euro/frequently-asked-questions-digital-euro-and-legal-tender(2024).cash_en#:~:text=Like%20cash%2C%20the%20digital%20euro,in%20digital%20euro%20from%20consumers.(April%2017,%202024).)

² European Central Bank, 'Frequently Asked Question on a Digital Euro', European Central Bank Website, https://www.ecb.europa.eu/euro/digital_euro/faqs/html/ecb.faq_digital_euro.en.html (February 14, 2024).

³ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369).

⁴ Ibid, Recital 57.

⁵ Ibid, Recital 22.

⁶ Article 5 of Regulation 2016/679 (GDPR).

⁷ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Articles 34, 35, and 36.

which is functional but simultaneously effectively protects users' personal data by design and by default.⁸

This problematic interaction is a data protection-related intersection of defective legal provisions by the Proposal for a Regulation on the establishment of the digital euro which bases itself on the primary law of Articles 3(1) c and 133 TFEU under the Common Commercial Policy (CCP) principles and the dogma of exclusive Union competence for Eurozone monetary policy formulation,⁹ and the GDPR's data protection legal provisions based on the primary law sources of Article 8 of the Charter¹⁰ and Article 16 TFEU.¹¹ This creates the need for an equilibrium to be found between the integration of a digital euro with legal tender in the Eurosystem on the one hand, which is the monetary authority of the Eurozone made up of the ECB and National Central Banks of Member States under the auspice of the ECB, and reaching the GDPR's high data protection standards safeguarded by the European Data Protection Board (EDPB) and European Data Protection Supervisor (EDPS) on the other.

The key institutional entity capable of striking that balance through more data protection-oriented amendments is the European Parliament (EP) and Council, which are behind the creation of the current Proposal, and even though it recognises the ECB's competence in issuing the digital euro as Union monetary policy in line with TFEU Article 133,¹² it is also true that the ECB is an EU-territorially-based organisation that is legally obliged to comply with GDPR data protection requirements when inviting the general public to share personal data. This is because these are essential for the functioning of the digital euro system, positing itself as a controller and processor of digital euro users' personal data, since GDPR Article 3(1) applies to the *'processing of personal data in the context of the activities of an establishment of a controller or a processor in the Union'*.¹³

A major example of this clash in practice, is the selective privacy design of the online payment transaction portal as having a single access point and giving the ECB access

⁸ Article 25 of Regulation 2016/679 (GDPR).

⁹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Explanatory Memorandum, Section 2, p.5.

¹⁰ Charter of Fundamental Rights of the European Union, 2000, Article 8.

¹¹ Treaty on the Functioning of the European Union, 2007, Articles 3 (1) (c), 133 and 16.

¹² Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Preamble Introductory Statement, p.16

¹³ Article 3(1) of Regulation 2016/679 (GDPR).

to users' personal data, monitoring users' digital euro holding limit,¹⁴ to detect fraud and money laundering without a low-value payment tracking threshold for these type of transactions.¹⁵ However, according to the October 2023 adopted Joint Opinion of the EDPS and EDPB, that single access point's necessity proportionality is questionable, needing elaborated proof of concept,¹⁶ and claims that *'making the timely detection of fraud more effective is not in itself sufficient to render the interference with the fundamental rights to privacy and data protection that the envisaged system would entail necessary in light of the Charter'*,¹⁷ especially arguably Article 8 of the Charter on the right to protection of individuals' personal data,¹⁸ and that *'the Proposal has important implications for individuals' fundamental rights to privacy and personal data protection'*,¹⁹ ultimately *'recalling the need to establish a high level of privacy and data protection to ensure the trust of Europeans in a future digital euro and the realisation of other rights and freedoms enshrined in the Charter'*, urging the proposed Regulation to legislatively, *'address the personal data protection aspects of the digital euro specifically and clearly'*.²⁰

Therefore, moving forward, it is vital to understand which exact out of the seven interrelated GDPR principles of lawfulness, fairness and transparency, purpose limitation, data accuracy, data minimisation, storage limitation, accountability and integrity and confidentiality challenge the legal provisions for data protection considerations of the Proposal for a Regulation for establishing the digital euro the most,²¹ and to see what exact shortcomings they unveil in the legislative design of the Articles of the currently envisioned digital euro system, which according to the EDPS-EDPB Joint Opinion,²² fails to reach the GDPR safeguarding standards of data protection by design and by default under Article 25(1) and (2) in totality.²³ These legal data protection-related shortcomings of the Proposal for a Regulation on establishing the digital euro which are to be explored using GDPR Articles, relate

¹⁴ European Data Protection Board, *'Digital euro: ensuring the highest data protection and privacy standards'*, European Data Protection Board Website, [https://www.edpb.europa.eu/news/news/2023/digital-euro-ensuring-highest-data-protection-and-privacy-standards_en#:~:text=According%20to%20the%20proposed%20Regulation,known%20as%20the%20holding%20limit.\(October%2018,%202023\).](https://www.edpb.europa.eu/news/news/2023/digital-euro-ensuring-highest-data-protection-and-privacy-standards_en#:~:text=According%20to%20the%20proposed%20Regulation,known%20as%20the%20holding%20limit.(October%2018,%202023).)

¹⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, Executive Summary, p.4.

¹⁶ Ibid, pp.3-4 and p.33, para. 103.

¹⁷ Ibid, p.21, para. 58.

¹⁸ Charter of Fundamental Rights of the European Union, 2000, Article 8.

¹⁹ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, p.9, para. 15.

²⁰ Ibid, p.23, para. 66.

²¹ Article 5 of Regulation 2016/679 (GDPR).

²² European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, p.24, para. 68.

²³ Article 25 (1) and (2) of Regulation 2016/679 (GDPR).

primarily to the legally uncertain characteristics of the digital euro's operational scheme mechanisms such as the current vagueness regarding the controllers' and processors' exact roles and behaviours in data managing procedures, which are presently far from diaphanous in terms of properly and pragmatically implementing the transparency, data minimisation, and purpose limitation principle requirements,²⁴ with the Joint Opinion stating that *the 'legislation should address the personal data protection aspects of the digital euro specifically and clearly', 'respect the data minimisation principle by design and by default' and clarify the 'purposes for which processing of personal data can be carried out for the provision of the digital euro'*.²⁵

The above criticism directly relates to the unclear relationship between the ECB, National Central Banks, Payment Service Providers and Providers of Support Services as potential controllers and joint controllers, and their blurred and equivocal data handling behavioural guidelines. This entails their limitations in terms of mostly them ensuring fair and lawful transparency about how they will process digital euro users' data, delineating the minimising of the data collected and processed, and setting out a clear purpose limitation phraseology with a translucent criteria-based guideline of that data processing procedure,²⁶ as the EDPS-EDPB Joint Opinion highlights that *'when establishing the single access point, the Eurosystem should ensure that the processing of personal data is minimised to what is strictly necessary and that data protection by design and by default is embedded'*,²⁷ when legislatively *'establishing the operational design and technological choices'* of the digital euro.²⁸

1.2 Purpose and Research Question

The scope of this Thesis is to unveil how the Proposal for a Regulation on the establishment of the digital euro, which is an integral part of the digital euro package,²⁹ problematically intersects with the legal principles of data protection outlined in the GDPR. More specifically, as highlighted by the EDPS-EDPB Joint Opinion,³⁰ the requirements of transparency, data minimisation, and purpose

²⁴ Article 5 (1) (a)-(c) and Articles 12, 13 and 15 of Regulation 2016/679 (GDPR).

²⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, paras 66, 67 and 68.

²⁶ Article 5 (1) (a)-(c) of Regulation 2016/679 (GDPR).

²⁷ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 38.

²⁸ *Ibid*, Executive Summary, p.4.

²⁹ European Commission, *'Digital Euro Package'*, European Commission Website, https://finance.ec.europa.eu/publications/digital-euro-package_en (28 June 2023).

³⁰ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, paras 66, 67 and 68.

limitation³¹ are the three out of the seven GDPR principles that this thesis focuses on due to their most intimate relevance to the defective data protection systemic legal mechanisms of the digital euro proposed Regulation when it comes to precisely what is and what is not translucently stated in its data-related clauses of the “*Privacy and Data Protection*” Chapter 8 which outlines legal provisions about what data is gathered, how much data is gathered, based on which criteria and for what delimited purposes this data of digital euro users’ is used by processors and controllers such as the ECB, National Central Banks and Payment Service Providers, as well as entities acting as Providers of Support Services to manage transactions. Thus, the research question to be answered as the telos of this thesis is: ‘*How can the requirements of transparency, data minimisation, and purpose limitation in the GDPR inhibit the establishment of a digital euro?*’

1.3 Delimitations

Moving forward, the main delimitation to this legal analytical project is the absence of specific case law on the digital euro, as due to the newness of the Proposal for a Regulation on the establishment of a digital euro, there have been no European Court of Justice (CJEU) judgements on it so far, or on its interaction with the GDPR. Moreover, the core reasoning behind the use of the GDPR as the main Regulation for conducting the legal analytical criticism instead of Regulation 2019/1725, is because this thesis looks not only at how digital euro users’ personal data are protected when processed by EU institutions such as the ECB, but also looks at how they are holistically processed in combination with National Central Banks, and other entities that are not EU institutions such as Payment Service Providers and Providers of Support Services. Therefore, since the GDPR has a broader scope that applies to all organisations executing data controlling and processing functions within the EU,³² the systematic use of its Articles enables a more wide-reaching application of data-safeguarding legal requirements on the Proposal for a Regulation for the establishment of the digital euro, tailored to the individuals whose data are being processed by multifarious data controller entities of public, private and EU character working together.³³

³¹ Articles 12, 13 and 15 and Article 5 (1)(a)-(c) of Regulation 2016/679 (GDPR).

³² Article 3 (1) of Regulation 2016/679 (GDPR).

³³ Krzysztofek, M. (2021), ‘*GDPR: Personal Data Protection in the European Union*’ In Wolters Kluwer Law International, p. 37.

What is more, this study focuses specifically on only one of the Proposals out of the two in the digital euro single currency package, which is namely the Proposal for a Regulation on the establishment of a digital euro due to word count limitations, having an eye only towards the digital euro transaction sphere of Member States part of the Eurozone, allowing for a clearer, deeper and more targeted analysis. This is another reason why the second Proposal for a Regulation on the provision of digital euro services by payment services providers incorporated in Member States whose currency is not the euro, is intentionally excluded from this analysis. This thesis does not focus on the data storage implications of the EU Digital Identity Wallet synergistic authentication tool as it is an initiative whose technical specification features remain currently largely undetermined in its premature³⁴ architectural reference framework stage,³⁵ and is more closely related to the concept of digital identification, but rather focuses on the actual digital euro system of electronic payments as depicted through the lens of its data protection-related Articles of the Proposal for a Regulation for establishing a digital euro to understand and problematise its data safeguarding characteristics when it comes to the extent of its transparency, data minimisation, and purpose limitation as a CBDC. Additionally, another limitational parameter to this thesis is the concentration on three out of seven of the GDPR principles, due to their higher degree of relevance to the guidelines and criteria of the technology utilised in the transaction-related mechanisms for the functioning of the digital euro when it comes to the aspect of upholding users' data privacy.³⁶

1.4 Methodology and Materials

Furthermore, the methodology utilised by this thesis is a legal dogmatic method of EU legal and law-related documents and a literature review of academic journal articles to complement the logic of the legal analytical reasoning. The EU legal dogmatic method of analysis used throughout this thesis looks at the different hierarchy of law sources at the primary, secondary, tertiary, and soft law levels, and aims to systematically explore the *'principles, rules and concepts governing a particular legal field'*,³⁷ which in this case is the field of the EU predominantly civil

³⁴ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 50.

³⁵ European Commission, *'Technical Specifications: EU Digital Identity Wallet'*, European Commission Website, <https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/Technical+Specifications> (April 12, 2024).

³⁶ Recital 1 of Regulation 2016/679 (GDPR).

³⁷ Jan M. Smiths *'What is Legal Doctrine: On The Aims and Methods of Legal Dogmatic Research'*, 2017, p.210

law system. The primary law dimension of this thesis' EU legal dogmatic method includes the TFEU and the Charter on Fundamental Rights, and the secondary law dimension consists of the legislative act of the GDPR as well as the Proposal for a Regulation for establishing the digital euro, which is not an active source of law yet, but rather a prospective legislative act with the potential of becoming secondary statutory law when adopted. This method is chosen in order to reveal the extent of harmonised cross-sectoral alignment and consistency of different Regulations, in this case, the Proposal for a Regulation for a digital euro and the GDPR, when examined at all levels of the EU law hierarchical structure of interpretation and looks at the language, legal doctrines, and embedded principles within it, to problematise the digital euro's data protection concerns.

Notably, this thesis follows the EU jurisdictional paradigm for its analysis in terms of using the EU legal framework and hierarchy in sources of law and acknowledges the Proposal for a Regulation on the establishment of the digital euro as not having secondary law legal status yet. However, it is analysed as an early form of anticipated secondary law, in an attempt to reveal what exact legal challenges exist prospectively and to foresee how to overcome them when applying the GDPR on it which is itself a very well-established secondary law source, as well as from a CJEU case law perspective, enabling adjacent GDPR and data privacy-related judgements to be explored to hypothesise the extent of legal certainty in possible future CJEU judgements dealing with the data privacy-digital euro nexus and its related principles. Thus, the critical legal argumentation of the analysis is supplemented.

Moreover, the main materials used include the 2023 Proposal for a Regulation on the establishment of the digital euro,³⁸ its analogous Annexes document,³⁹ and the 2016 GDPR,⁴⁰ the data-related legal provisions of which are discussed comprehensively in Chapters 2 and 3. Supplementarily, the October 2023 EDPS-EDPB Joint Opinion on the Proposal for a Regulation on the establishment of the digital euro is complementarily used as soft law throughout this thesis, providing a basis for guiding the legal analytical criticism, due to the fact that it is a document produced by data protection dedicated EU entities independently overseeing compliance to the GDPR.⁴¹ There is also limited use of the secondary law of

³⁸ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369).

³⁹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369).

⁴⁰ General Data Protection Regulation (GDPR) 2016/679 of the European Parliament and of the Council.

⁴¹ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023.

Regulation 2018/1725 2015⁴² and the "Payment Services Directive 2" (PSD2)⁴³ to further complement legal argumentation. To add, CJEU cases parallel to the topics of data protection and digital monetary transactions are also important materials used as part of reinforcing the legal dogmatic method of this thesis, giving insight into the jurisprudential dimension of EU law sources, and aiding in establishing an attempted interpretation and approximate setting of legal precedent in this particular domain of problematically intersecting laws, which is the common commercial policy competence legal basis of TFEU Article 133 and the Proposal for a Regulation for a digital euro, and the data protection legal basis of TFEU Article 16 and the GDPR.⁴⁴

1.5 Outline

In the succeeding Chapter 2, a general preview of the legislative process and important features of the Proposal for a Regulation on the establishment of a digital euro and an outlining of its three key legal provisions of Articles 34, 35, and 36 related to data privacy considerations of digital euro users' is conducted. Next, in Chapter 3, the legal provisions identified in the three data-protection-related Articles of the Proposal for a Regulation and its Annex documents' specifications are cross-examined with the three requirements of transparency, data minimisation and purpose limitation of the GDPR, utilising several of its Articles to emphatically highlight the problematisations of the unclear guidance criteria for the procedural role of controller and processor entities involved in the data handling mechanisms behind the distribution and operability of the digital euro. Following this, Chapter 4 is the conclusion, directly answering the research question and criticising the identified data protection chasms concerning the GDPR axioms of transparency, data minimisation and purpose limitation as well as discusses the feasibility of specific technical solutions in the form of lingual amendments to the current legal provisions building up on suggestions by the EDPS and EDPB Joint Opinion, in order to overcome the data privacy challenges to the digital euro. Finally, Chapter 5 is the bibliography of all sources used, organised according to the type of document each one constitutes.

⁴² Regulation (EU) 2018/1725 (EUDPR) of the European Parliament and of the Council.

⁴³ Directive (EU) 2015/2366, "Payment Services Directive 2" (PSD2).

⁴⁴ Treaty on the Functioning of the European Union, 2007, Articles 133 and 16.

2 Proposal for a Regulation on the Digital Euro

2.1 Legislative Process and General Preview

The current composed Proposal for a Regulation on the establishment of the digital euro is at the beginning of the legislative process chronologically. Its preceding background research, analysis, technical evaluation and information-gathering preparatory work timeline has its ideological roots in the Commission's Digital Finance and Retail Payment Strategy of September 2020 which emphatically called for '*a digital euro, as a retail central bank digital currency*' which '*would act as a catalyst for innovation in payments, finance and commerce in the context of ongoing efforts to reduce the fragmentation of the Union retail payments market*', leading to the ECB's Report on the Digital Euro only a month later which truly kick-started the practical digital euro CBDC initiative and formulated the foundation for '*seeking views on the benefits and challenges of issuing a digital euro and on its possible design*'.⁴⁵ Following this, the Eurogroup's finance ministers also implied the creation of a digital euro to reiterate the robustness of the EU's digitalised economy in 2021 and to foster innovation in its financial system.⁴⁶

After two years of an ECB-orchestrated investigation phase of technical reports on the design of the digital euro regarding elements of online and offline payment availability, distribution and compensation modelling and data privacy levels that started in October 2021, endorsed by the European Parliament and Council in 2022,⁴⁷ the formulation of the current June 2023 Proposal for a Regulation on the establishment for the digital euro and the launch of the digital euro package occurred, as a monetary policy applying to all EU Member States in line with the common commercial policy notion of '*lex superior derogate legi inferiori*', under the legal basis of Article 133 TFEU, something expressed in the introductory statement prologue of the Preamble.⁴⁸ Parallel to this, in November 2023 the ECB began the first step of the preparation stage of the digital euro, due to last for two years, before moving on to the second stage which is the case development and rollout. As of this EP legislative term, the Proposal, which reflects the dialogue between legislators

⁴⁵ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Recitals 1 and 2.

⁴⁶ Ibid, Recital 1.

⁴⁷ Ibid, Recital 1.

⁴⁸ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Preamble Introductory Statement, p.16.

who have the power to make design adjustments to the currently proposed digital euro system and the ECB which should implement them, is at its committee work and draft amendment recommendation⁴⁹ preparatory stage at which it entered in November 2023, under the responsibility of the Committee on Economic and Monetary Affairs (ECON),⁵⁰ which should meticulously account for the data privacy concerns raised in the EDPS-EDPB Joint Opinion of October 2023, before voting and trilogue deliberations of the legislative process are concluded and its final version is adopted during the fourth quarter of the first year of the upcoming 2024-2029 EP legislative term commencing after the June 2024 elections,⁵¹ in full constellation with GDPR's safeguarding legal requirements.⁵²

As a general preview of the current design of the digital euro system which will be managing users' data to operate, Preamble Recital 5 of the Proposal Regulation on the establishment of the digital euro of June 2023, states that since *'cash alone cannot answer the needs of a digitalised economy, it is essential to support financial inclusion by ensuring universal, affordable and easy access to the digital euro to individuals in the euro area'*⁵³ and therefore a digital euro should be created to *'complement euro bank notes and coins'* as claimed in the paragraph of Recital 6.⁵⁴ Furthermore, as stated in Recital 9, similarly to the physical forms of the euro, the designed digital euro constitutes a *'direct liability of the European Central Bank or of the national central banks of the Member States whose currency is the euro towards digital euro users'*.⁵⁵

Recital 30 further explains the design of the digital euro system. It highlights that support services play a role in the establishment of the digital euro transaction system, claiming that *'digital euro payment services should include basic and additional digital euro payment services'* with *'support services'* being *'considered essential for the use of the digital euro by natural person'*.⁵⁶ Moreover, Recital 23 of the Preamble explains that the proposed regulation for establishing a digital euro

⁴⁹ European Parliament, *'Legislative Train Schedule: Digital Euro in an Economy that Works for People'*, European Parliament Website, <https://www.europarl.europa.eu/legislative-train/theme-an-economy-that-works-for-people/file-digital-euro> (2024).

⁵⁰ European Parliament Economic Governance and EMU Scrutiny Unit, *'Briefing: What's Next for the Digital Euro?'*, p.8, Available at [https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747854/IPOL_BRI\(2023\)747854_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747854/IPOL_BRI(2023)747854_EN.pdf).

⁵¹ European Central Bank, *'Digital Euro: The Next Step in the Advancement of Our Currency'*, p.16, Available at https://www.ecb.europa.eu/euro/digital_euro/timeline/profuse/shared/pdf/ecb.dedocs231018_1.en.pdf.

⁵² General Data Protection Regulation (GDPR) 2016/679 of the European Parliament and of the Council, Article 5.

⁵³ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Recital 5.

⁵⁴ Ibid, Recital 6.

⁵⁵ Ibid, Recital 9.

⁵⁶ Ibid, Recital 30.

aims for digital euro payment accounts as a *'category of payment accounts denominated in euro through which digital euro users are able to carry out'* transactions such as the placing of funds, the withdrawal of cash and the execution and reception of payments with third-party entities.⁵⁷

In the same light, Recital 16 portrays the digital euro, as a *'digital currency with the status of legal tender denominated in euro issued by the European Central Bank and national central banks of the Member States whose currency is the euro'* and claims it will be granted this legal tender status to *'support its usability across the euro area'*. In the same paragraph, the ECB and National Central Banks are symbolically acknowledged as liable entities that should cooperate and coordinate to maintain the price stability and monetary validity of the digital euro in accordance with Articles 127 and 128 TFEU.⁵⁸ Most importantly, Recital 25 builds up on this point by going on to state that: *'The European Central Bank should implement appropriate technical and organisational measures, including state-of-the-art security and privacy-preserving measures, to ensure that the identity of individual digital euro users cannot be linked with the information in the single access point by entities other than payment service providers whose client or potential customer is the digital euro user'*.⁵⁹

In the above Recital paragraph, the role of the ECB is portrayed as having the responsibility for not only issuing the digital euro and ensuring its legal tender, but also managing and designing it in a way that ensures the privacy of its users, anointing the ECB and National Central Banks as *'joint controllers'* when it comes to the matter of processing of personal data through the single access point.⁶⁰ Thereafter, Recital 35 claims that payment service providers, who are also involved in the issuing and data processing processes of the digital euro, *'should implement appropriate technical and organisational measures including state-of-the-art security and privacy-preserving measures to ensure that the identifier of the device of individual digital euro users cannot be compared with the information about the digital euro user in order to identify the data subject, except for the purpose of Article 37'*,⁶¹ which is dedicated to detecting money-laundering activities using

⁵⁷ Ibid, Recital 23.

⁵⁸ Ibid, Recital 16.

⁵⁹ Ibid, Recital 25.

⁶⁰ Ibid, Recital 25.

⁶¹ Ibid, Recital 35.

offline digital euro transactions,⁶² therefore somewhat delimitating the purposes of Payment Service Providers' data handling procedures.

Crucially, Recitals 70-76 present the data-related considerations of the Proposal for a Regulation, acknowledging *'the rights to privacy and personal data protection are fundamental rights enshrined in Article 7 and 8 of the Charter'* and the EDPB's 2022 early stage privacy related concerns on the digital euro's design in Recital 70.⁶³ In Recital 71, it is pointed out that *'the digital euro should therefore be designed so as to minimise the processing of personal data by payment service providers and by the European Central Bank to what is necessary to ensure the proper functioning of the digital euro'* and that digital euro transaction settlements *'should be designed in such a way that neither the European Central Bank nor national central banks can attribute data to an identified or identifiable digital euro user.'*⁶⁴

Following this, Recital 72 states that *'data protection by design and data protection by default should be embedded in all data processing systems developed and used within the framework of this Regulation'*,⁶⁵ hinting the explicit recognition of the GDPR's importance in guiding the digital euro users' data processing in paragraph 74.⁶⁶ Crucially, in Recital 73, it is claimed that *'payment service providers should be able to process personal data in so far as it is necessary to fulfil tasks that are essential to the proper functioning of the digital euro'* such as *'offline digital euro payments'* and enforcement of *'holding limits'*, having the permission to *'process personal data to comply with existing tasks in the public interest or for compliance with a legal obligation'*, being *'the controller of personal data as regards these tasks'*.⁶⁷

Then, Recital 75 claims that *'payment service providers should therefore not process personal data related to offline digital euro payment transactions, but only personal data related to depositing or withdrawing digital euros from digital euro payment accounts to load them onto the local storage device'*⁶⁸, and Recital 76 claims that *'the European Central Bank and national central banks may process personal data in so far as it is necessary to fulfil tasks that are essential to the proper functioning of the digital euro'*, delineating *'the processing of personal data for the purposes of*

⁶² Ibid, Article 37.

⁶³ Ibid, Recital 70.

⁶⁴ Ibid, Recital 71.

⁶⁵ Ibid, Recital 72.

⁶⁶ Ibid, Recital 74.

⁶⁷ Ibid, Recital 73.

⁶⁸ Ibid, Recital 75.

the settlement of digital euro payment transactions and the management of the security and integrity of the digital euro infrastructure’ as tasks in the public interest.⁶⁹

According to the same Recital segment, these tasks involving data processing of digital euro users’ data, should be executed using *‘state-of-the-art security and privacy-preserving measures, such as pseudonymisation or encryption, to ensure that data cannot be used to directly identify a specific digital euro user’*.⁷⁰ Finally, Recital 77 of the Preamble provides that *‘when establishing the single access point, the European Central Bank and national central banks should ensure that the processing of personal data is minimised to what is strictly necessary and that data protection by design and by default is embedded’*,⁷¹ which is a significant phrase completing the synoptic illustration of the intricately designed interplay of the ECB, National Central Banks, Payment Service Providers and Providers of Support Services in the roles of controllers, joint controllers and processors, managing digital euro users’ data when establishing the digital euro transaction system.

2.2 Key Concepts Related to Digital Euro Users’ Data

The key concepts of the digital euro transaction system, which utilises users’ data in its established proposed Regulation design, are directly interlinked with the core features⁷² of offline availability, universal acceptability as a free-of-charge public good of the Eurozone that has a guaranteed static value rate, and privacy and security.⁷³ To solidify these features, Article 1, sets out the subject matter of the Proposal for a Regulation for establishing a digital euro as the laying down of *‘rules concerning in particular its legal tender status, distribution, use, and essential technical features’*,⁷⁴ to adapt the euro to technological changes of the market and assure its use as a digital form of the single currency as explicitly expressed in Article 3.⁷⁵ As a result, Article 7 realises the legal tender status of the digital euro, and Article 8 specifies its territorial scope as the Eurozone.⁷⁶ Moreover, Article 4 appoints the

⁶⁹ Ibid, Recital 76.

⁷⁰ Ibid, Recital 76.

⁷¹ Ibid, Recital 77.

⁷² European Central Bank, *‘What Would a Digital Euro Be?’*, European Central Bank Website, https://www.ecb.europa.eu/euro/digital_euro/features/html/index.en.html (2024).

⁷³ European Central Bank, *‘Digital Euro: The Next Step in the Advancement of Our Currency’*, p.9, Available at https://www.ecb.europa.eu/euro/digital_euro/timeline/profuse/shared/pdf/ecb.dedocs231018_1.en.pdf.

⁷⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 1.

⁷⁵ Ibid, Article 3.

⁷⁶ Ibid, Articles 7 and 8.

ECB and National Central Banks as the competent authorities of issuing the digital euro as well as corroborates their direct liability towards digital euro users,⁷⁷ which could be also interpreted as entailing the management of the financial data security aspect of the digital euro transaction system that users' data is part of, in alignment with the Eurosystem's oversight mandate to ensure safety of digital transactions.⁷⁸

Furthermore, Article 2 defines the key terms used by this proposed Regulation when devising the digital euro transaction system which is heavily based on harnessing its users' data.⁷⁹ Most importantly, the definitions relevant to data handling-related clauses are those of Article 2(4), defining the term *'digital euro user'* as *'anyone making use of a digital euro payment service in the capacity of payer, payee, or both'* and Article 2(5) clarifying the term *'digital euro payment account'* as meaning *'an account held by one or more digital euro users with a payment service provider to access digital euro recorded in the digital euro settlement infrastructure or in an offline digital euro device and to initiate or receive digital euro payment transactions, whether offline or online, and irrespective of technology and data structure'*.⁸⁰

Additionally, some more important term definitions in relation to digital euro user's data processing when conducting electronic transactions in the system are the *'online digital euro payment transaction'* meaning *'a digital euro payment transaction where the settlement takes place in the digital euro settlement infrastructure'* expressed in Article 2(14) and *'user identifier'* meaning *'a unique identifier created by a payment service provider distributing the digital euro that unambiguously differentiates, for online digital euro purposes, digital euro users but that is not attributable to an identifiable natural or legal person by the European Central Bank and the national central banks'* outlined in Article 2(27).⁸¹ Also, the term *'switching'* is defined as the *'transferring from one payment service provider to another either the information about all or some digital euro payment services, including recurring payments, executed on a digital euro payment account, or the digital euro holdings from one digital euro payment account to the other, or both, with or without closing the former digital euro payment account, while maintaining the same account identifier'* in Article 2(26) and the term *'mobile device'* is defined in Article 2(31) as

⁷⁷ Ibid, Article 4.

⁷⁸ European Central Bank *'Oversight'*, European Central Bank Website, Available at <https://www.ecb.europa.eu/paym/pol/html/index.en.html> (2024).

⁷⁹ Ibid, Article 2.

⁸⁰ Ibid, Article 2 (4) and (5).

⁸¹ Ibid, Article 2 (14) and (27).

a device that *'enables digital euro users to authorise digital euro payment transactions online or offline including in particular smart phones, tablets, smart watches and wearables of all kind'* but is however referred to as *'local storage device'*, particularly within the subsequent data protection clauses.⁸²

To add, equally important terms that relate deeply to data processing protection implications of digital euro users' personal data are those of *'user alias'*, defined in Article 2(28) as *'a unique pseudonymous identifier used to protect user's identity when processing digital euro payments that can only be attributable to an identifiable natural or legal person by the payment service provider distributing the digital euro or by the digital euro user'* and *'user authentication'* meaning *'a unique piece of information created by the payment service provider distributing the digital euro that together with the user identifier allows a digital euro user to prove ownership of the online digital euro holdings recorded in the digital euro settlement infrastructure'* as defined in Article 2(29).⁸³ Finishing off, Article 2(30) defines *'providers of support services'*, referring to Providers of Support Services of the digital euro transaction system, as *'entities, appointed by the European Central Bank, that provide services to all payment service providers distributing the digital euro that are aimed at facilitating the smooth functioning of digital euro payment transactions'*.⁸⁴

Subsequently, Article 13 outlines that Payment Service Providers have the capability to distribute the digital euro to digital euro users,⁸⁵ Article 16 delineates the limits to its store of value in terms of holding limits enforced by Payment Service Providers,⁸⁶ and Articles 22, 23, and 24 provide the technical features of the functionalities of this distribution, in terms of its accessibility and transaction taxonomy.⁸⁷ In more detail, Article 22(3) specifies that *'each digital euro payment account shall have a unique digital euro payment account number'*⁸⁸ and Articles 23 and 24 distinguish between the different types of online, offline and conditional payment transactions that digital euro users can conduct.⁸⁹

⁸² Ibid, Article 2 (26) and (31).

⁸³ Ibid, Article 2 (28) and (29).

⁸⁴ Ibid, Article 2 (30).

⁸⁵ Ibid, Article 13.

⁸⁶ Ibid, Article 16.

⁸⁷ Ibid, Articles 22, 23 and 24.

⁸⁸ Ibid, Article 22 (3).

⁸⁹ Ibid, Articles 23 and 24.

In the modalities of distribution section of the proposed regulation, Articles 25 and 26 express the future will for digital euro interoperability with the EU Digital Identity Wallet⁹⁰ and the ECB's competence *'to enable...private digital means of payment to use rules, standards and processes governing the digital euro payment services'* as well as open standard interoperability in this regard.⁹¹ Articles 27 and 28 establish the rules governing the digital euro's dispute settlement mechanism and those of front-end service access of Payment Service Providers to the digital euro,⁹² highlighting that the ECB *'shall not have access to any personal data in relation to the front-end services developed by the European Central Bank and used by the payment services providers'* in Article 28(2).⁹³

Moving forward, Articles 30 and 31 outline the rules regarding digital euro data-based payment transactions and the possibility of the digital euro user to switch accounts at their request from one Payment Service Provider to another Payment Service Provider,⁹⁴ highlighting in Article 31(1), the *'maintaining of the same account identifiers'* when doing so,⁹⁵ and that if a Payment Service Provider has *'lost the digital euro payment account-related data concerned, the European Central Bank and national central banks may authorise the switching of digital euro payment accounts held with that payment service provider to another payment service provider designated by the digital euro user'*, in Article 31(2).⁹⁶ Essential to the data privacy of digital euro users are also Articles 32, 33, and 34 which outline the competence of the ECB to process their data for their purposes of conducting anti-fraud detection tasks and the competence it has to access the personal data stored in their mobile devices on those grounds, as long as they are fair, reasonable and non-discriminatory.⁹⁷ In more detail, Article 32(3)(a)-(b) provides that *'the fraud detection and prevention mechanism shall (a) assess the exposure to fraud risk of online digital euro transactions in real-time at the exclusive use of payment service providers before the transaction is introduced into the digital euro settlement infrastructure'* and *'(b) support payment service providers in detecting fraudulent transactions in online digital euro payment transactions that have been settled'*.⁹⁸

⁹⁰ Ibid, Article 25.

⁹¹ Ibid, Article 26.

⁹² Ibid, Articles 27 and 28.

⁹³ Ibid, Article 28 (2).

⁹⁴ Ibid, Articles 30 and 31.

⁹⁵ Ibid, Article 31 (1).

⁹⁶ Ibid, Article 31 (2).

⁹⁷ Ibid, Articles 32, 33 and 34.

⁹⁸ Ibid, Article 32 (3) (a)-(b).

Similarly, Article 37 allows for processing of digital euro users' personal data in terms of offline digital euro transactions for the purposes of Anti-Money laundering prevention practices by the Financial Intelligence Unit and other competent authorities as per 37(3), however ensures in 37(2), that digital euro users' transaction data shall not be retained by Payment Service Providers or by the ECB and National Central Banks. These data categories that can be processed are delineated in paragraph 4 as: '*(a) the amount funded or defunded; (b) the identifier of the local storage device for offline digital euro payment; (c) the date and hour of the funding and defunding transaction; (d) the accounts numbers used for funding and defunding*'.⁹⁹ Articles 40 and 41, relate to an attempt of transparency and review of the digital euro data-based transaction system in general, which do not explicitly mention the conduction of Data Protection Impact Assessments (DPIAs) to ensure the GDPR-compliant processing of digital users' data, but rather a generalised review of market trends and account creation rates to monitor the financial stability of the newly formulated form of electronic capital and test its efficiency, which shall be presented in a report by the EP and Council and Commission after 3 years of its issuance.¹⁰⁰

Nevertheless, the most substantial and explicit data protection-related clause aimed at ensuring the key concept of protection of the data privacy of digital euro users is upheld, which is the emphasis of the analysis, is that of Chapter 8 of the proposed Regulation containing the legal provision Articles 34, 35, and 36. These Articles, making references to the Annex document of the Proposal for a Regulation, outline the exact rules, guidelines and behavioural criteria for the ECB, National Central Banks, Payment Service Providers and Providers of Support Services, each in their distinct roles as controllers, joint controllers, and processors of digital euro's data in different hypothetical situational scenarios of the digital euro transaction system.¹⁰¹ They are explored comprehensively in the two following subsections, unveiling the exact guidance framework laid out currently for data protection of the financial-related personal data of digital euro users.

⁹⁹ Ibid, Article 37 (2), (3) and (4).

¹⁰⁰ Ibid, Articles 40 and 41.

¹⁰¹ Ibid, Articles 34, 35, and 36.

2.2.1 Articles 34 and 36: Processing by Payment Service Providers and Providers of Support Services

Article 34, outlines the data protection and privacy guidelines that Payment Service Providers need to abide by when processing digital euro users' data,¹⁰² delimiting the purposes for which they are allowed to do so in paragraph 1 by stating that Payment Service Providers '*perform a task in the public interest*' for the five purposes of:

*'(a) the enforcement of limits, including the verification of whether prospective or existing digital euro users have digital euro accounts with another Payment Service Provider, as referred to in Article 16; (b) funding and defunding as referred to in Article 13 (2) and (3), and digital euro payment transactions as referred to in Article 13(4), (c) the provision of offline digital euro, including the registration and de-registration of the local storage devices as referred to in letter (b) of Annex I, (d) compliance with Union sanctions as referred to in Article 29' and '(e) the obligations of payment service providers related to the execution of transactions and the prevention and detection of fraud, combatting money laundering and terrorist financing under, taxation compliance and relevant national law, the management of operational and security risk and obligations under Directive (EU) 2014/92/EU, in so far as they concern the digital euro'.*¹⁰³

More specifically, the data processing purpose limitation (c) regarding the provision of the offline digital euro refers to letter (b) of Annex I which is the purpose of '*enabling digital euro users to initiate and receive digital euro payment transactions and providing digital euro users with digital euro payment instruments*'.¹⁰⁴ As for the last part of the data processing purpose limitation of Article 34(1) (e), this refers to the Payment Service Providers' legitimate ability to conduct digital euro-related fee comparability investigations into payment accounts having access to basic payment service features, to prevent and detect illicit activities that can take place using the digital euro payment system.¹⁰⁵

Furthermore, the final phrase of Article 34(1) states that '*for the provision of offline digital euro, the processing of personal data by payment service providers is limited to funding and defunding in accordance with Article 37 paragraphs 3, 4 and 5*'¹⁰⁶ which implies the exceptional purposes of anti-money laundering detection tasks such as the Payment Service Providers ability to '*retain data of funding and defunding for storing digital euros on payment instruments*' involving the four types

¹⁰² Ibid, Article 34.

¹⁰³ Ibid, Article 34 (1).

¹⁰⁴ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex I (b).

¹⁰⁵ Ibid, Annexes I and II.

¹⁰⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (1).

of financial and authentication data of *'(a) the amount funded or defunded; (b) the identifier of the local storage device for offline digital euro payment; (c) the date and hour of the funding and defunding transaction; (d) the accounts numbers used for funding and defunding'* and any Commission imposed *'implementing acts setting offline digital euro payment transaction limits and holding limits'*.¹⁰⁷

Meanwhile, Article 34(2) delineates the exact types of data related to digital euro users and their transaction activity that are to be processed by Payment Service Providers¹⁰⁸ for only the purposes of Article 34(1)(a)-(c) of enforcing holding limits, verifying digital euro users' accounts, monitoring their funding and defunding activities and registering or de-registering them to the local storage to provide the offline digital euro.¹⁰⁹ It does this through making a reference to Annex III paragraphs 1-3 which outline the types of data to be processed by Payment Service Providers as:

'the user identifier; the user authentication, information on digital euro payment accounts including information on digital euro holdings of the digital euro user and the unique digital euro payment account number' and 'information on online digital euro payment transactions, including the transaction identifier, the transaction amount, information of non-digital euro payment accounts, the account number of the linked non-digital euro payment account' as well as the 'name of the local storage device holders, and information on the local storage device including the identifier of the local storage device'.¹¹⁰

Thereafter, Article 34(3) enables the Commission to update the types of data processed by Payment Service Providers as listed above, and appoints Payment Service Providers as controllers of digital euro users' personal data for the purposes of paragraph 1, and as joint controllers in instances where a digital euro payment account held by one payment service provider is linked with a non-digital euro one.¹¹¹ Lastly, Article 34(4) delineates that Payment Service Providers *'shall implement appropriate technical and organisational measures including state-of-the-art security and privacy-preserving measures to ensure that any data communicated to the European Central Bank and the national central banks or to providers of support services do not directly identify individual digital euro users'*,

¹⁰⁷ Ibid, Article 37 (3), (4) and (7).

¹⁰⁸ Ibid, Article 34 (2).

¹⁰⁹ Ibid, Article 34 (1) (a)-(c).

¹¹⁰ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (1), (2) and (3).

¹¹¹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (3).

implying a pseudonymisation technique to enhance minimisation of the data processed.¹¹²

Henceforth, Article 36 delineates the data privacy and protection rules governing the processing of digital euro users' data by Providers of Support Services when providing payment-related services to Payment Service Providers,¹¹³ with Article 36(1) (a)-(b) stating that *'payment service providers perform a task in the public interest, where they process personal data'* for the purposes of *'(a) supporting the prevention and detection of fraud across payment service providers'* and *'(b) supporting the exchange of messages for the resolution of disputes'*.¹¹⁴ In continuation, as per Article 36(2),¹¹⁵ the types of data to be processed by Providers of Support Services only for the purpose of fraud detection and prevention of Article 36(1) subparagraph (a),¹¹⁶ are laid out in Annex V as *'information on digital euro payment accounts and transactions, including the unique digital euro account identifier and transaction amount'* as well as *'information on the transaction session of a digital euro user, including the device internet protocol address-range'*.¹¹⁷

Following the same phraseological pattern as the previously examined Article, Article 36 (3) expresses the Commission's power to make updates to the types of data listed in Annex V¹¹⁸ and Article 36(4) claims that *'shall only take place when appropriate technical and organisational measures including state-of -the-art security and privacy-preserving measures are implemented to ensure that the providers of support services cannot directly identify individual digital euro users'*, indicating a consideration of a pseudonymisation technique for data minimisation in regards to digital euro users.¹¹⁹ Ultimately, Article 36(5) appoints Providers of Support Services as controllers of digital euro users' personal data for the reasons of fraud detection and communication for dispute resolution. Importantly, the last sentence of this paragraph states that the ECB and National Central Banks have the capability of *'appointing the operators of any payment-related services across*

¹¹² Ibid, Article 34 (4).

¹¹³ Ibid, Article 36.

¹¹⁴ Ibid, Article 36 (1)(a)-(b).

¹¹⁵ Ibid, Article 36 (2).

¹¹⁶ Ibid, Article 36 (1)(a).

¹¹⁷ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex V.

¹¹⁸ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 36 (3).

¹¹⁹ Ibid, Article 36 (4).

Payment Service Providers and auditing of the service performance level’ however conducting this oversight *‘without processing any personal data’*.¹²⁰

2.2.2 Article 35: Processing by the ECB and National Central Banks

Moving on, Article 35 outlines the privacy safeguarding guidelines of data processing by the ECB and National Central Banks in terms of the delineation of the public tasks or *‘exercise of official authority’* purposes for this processing and the types of data processed.¹²¹ These purposes are the most far-reaching compared to Payment Service Providers and Providers of Support Services and in Article 35 (1) (a)-(e) they are described as the:

‘(a) provision of access for payment service providers to the digital euro settlement infrastructure and support the exchange of messages between payment service providers; (b) settlement of online digital euro payment transactions; (c) safeguarding the security and integrity of the digital euro settlement infrastructure and of local storage devices; (d) supporting verification by payment service providers of whether a prospective user already has digital euro payment accounts with other payment service providers in order to prevent the circumvention of limits in accordance with Article 16’ and ‘(e) in exceptional circumstances as defined in Article 31 (2), authorising payment service providers in switching digital euro payment accounts held with a payment services provider to another payment service providers designated by the digital euro user’.¹²²

Then, Article 35(2) respectively refers to Annex IV to specify the types of data to be processed by the ECB and National Central Banks.¹²³ For the purpose of providing access for Payment Service Providers to the digital euro settlement infrastructure and supporting their communication with other Payment Service Providers,¹²⁴ the types of data to be processed are *‘information on digital euro payment accounts and transactions, including the unique digital euro payment account number and including the transaction amount’*.¹²⁵ Additionally, for the purpose of settling online digital euro payment transactions,¹²⁶ digital euro users’ data processing is minimised to the personal data of *‘the user alias and authentication and the reference to digital euro holdings to debit and credit’*.¹²⁷ Next, for the purpose of safeguarding the

¹²⁰ Ibid, Article 36 (5).

¹²¹ Ibid, Article 35.

¹²² Ibid, Article 35 (1) (a)-(e).

¹²³ Ibid, Article 35 (2).

¹²⁴ Ibid, Article 35 (1)(a).

¹²⁵ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV (1) (i)-(ii).

¹²⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (1) (b).

¹²⁷ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV (2) (i)-(iv).

security and integrity of the local storage devices and digital euro settlement infrastructure,¹²⁸ it is stated that *‘processing shall be limited to the data required for counterfeit analysis of offline digital euro payment transactions: information on the local storage device, including the local storage device number’*.¹²⁹ As for the purposes of supporting Payment Service Provider verification of whether prospective digital euro users already possess an account with other Payment Service Providers to prevent the circumvention of store value limitations of Article 16 and the exceptional circumstance of authorising switching digital euro payment accounts held with one Payment Service Provider to another Payment Service Provider chosen by the user,¹³⁰ the limits to the types of data to be processed are presented as *‘the user identifier, the user authentication, related to user’s existing digital euro holdings; and information on digital euro payment accounts, including the unique digital euro payment account number, digital euro holdings of the user, the holding limit selected by the user and the type of digital euro account’*.¹³¹

In turn, Article 35(3) expresses the Commission's power to update the types of data to be processed by ECBs and National Central Banks once more,¹³² and paragraph 4 hints at the consideration of the GDPR privacy by design and by default and pseudonymisation concepts, when claiming that personal data processed for tasks in public interests as referred to in paragraph 1¹³³ *‘shall be supported by appropriate technical and organisational measures including state-of-the-art security and privacy-preserving measures’* including *‘the clear segregation of personal data to ensure that the European Central Bank and the national central banks cannot directly identify individual digital euro user’*.¹³⁴ Article 35(5) establishes the ECB as the controller or joint controller with National Central Banks when conducting unilateral or synergistic tasks accordingly,¹³⁵ for the purposes of paragraph 1 but also those of subsequent paragraph 8.¹³⁶ These are outlined as establishing a single access point of digital euro user identifiers and the related digital euro holding limits, with

¹²⁸ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (1) (c).

¹²⁹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV (3).

¹³⁰ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (1) (d)-(e).

¹³¹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV (4).

¹³² Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (3).

¹³³ Ibid, Article 35 (1) (a)-(e).

¹³⁴ Ibid, Article 35 (4).

¹³⁵ Ibid, Article 35 (5).

¹³⁶ Ibid, Article 35 (1) and (8).

the reasoning of supporting the task of Payment Service Providers *‘to enforce the holding limits in accordance to Article 16(1) and ensuring the emergency switching upon the request of the user in accordance with Article 31(2)’*.¹³⁷ When doing this, it is stated at the end of this paragraph that the ECB and National Central Banks should once again implement privacy by design and pseudonymisation techniques to protect the digital euro users’ from being identified in terms of being *‘inferred from the information accessed via the single access point by entities other than payment service providers whose customer or potential customer is the digital euro user’*.¹³⁸

To end, Article 35(6) claims that the Article acts *‘without prejudice to the processing of personal data involved in the performance of the other tasks and powers, including for the supervision of credit institutions and the oversight of payment systems, of the European Central Bank and the national central banks’* implying the potential of processing digital euro user-related data in certain credit and transactional oversight contexts.¹³⁹ Finally, Article 35(7) states that *‘where the European Central Bank decides not to confer tasks referred to in Articles 27 and 32 upon providers of support services’* it may *‘process the types of personal data referred to in Annex 5 subject to the requirements referred to in paragraph 4’*,¹⁴⁰ giving the ECB the ability of extra special access to more types of data which are *‘information on digital euro payment accounts and transactions, including the unique digital euro account identifier and transaction amount, and information on the transaction session of a digital euro user, including the device internet protocol address-range’*,¹⁴¹ on the grounds of fraud prevention and detection and dispute settlement,¹⁴² as long as they take the appropriate safeguarding measures of *‘segregation of personal data to ensure that the European Central Bank and the national central banks cannot directly identify individual digital euro user’*.¹⁴³

¹³⁷ Ibid, Article 35 (8).

¹³⁸ Ibid, Article 35 (8).

¹³⁹ Ibid, Article 35 (6).

¹⁴⁰ Ibid, Article 35 (7).

¹⁴¹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex V(i)-(ii).

¹⁴² Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Articles 27 and 32.

¹⁴³ Ibid, Article 35 (4).

3 Relationship to Data Protection Law

3.1 Relevant Provisions of Data Protection Law and the EDPS-EDPB Opinion

The digital euro data protection related Articles 34, 35, and 36 above, which are the rulebook for how the ECB, National Central Banks, Payment Service Providers and Providers of Support Services process data¹⁴⁴ especially in scenarios where they have the role of controllers and joint controllers,¹⁴⁵ are criticised by the EDPS-EDPB Joint Opinion for not fully applying GDPR requirements,¹⁴⁶ particularly those of transparency, data minimisation, and purpose limitation,¹⁴⁷ which need to be further elaborated, elucidated and crystallised.¹⁴⁸ Building upon this criticism, the most relevant GDPR Articles are therefore primarily Article 5 paragraph 1 subparagraphs (a)-(c), outlining the interconnected transparency, data minimisation, and purpose limitation principles that controllers of the digital euro must comply with while processing data when performing tasks in the public interest.¹⁴⁹

A CJEU judgement that is related to the importance of balancing the rights of individuals' data privacy with accessing their information in the public interest is the landmark Google Spain C-131/12 case which highlighted the necessity of limiting data processing practices, such as minimising the types of data and delineating the purposes and reasons for their processing.¹⁵⁰ In addition, when it comes to the context of electronic communications data which is a prevalent fundamental element for the functioning of the digital euro system which utilises digital euro users' data to operate, the judgement of the Tele2-Watson joined cases C-203/15 and C-698/15¹⁵¹ demonstrated that the indiscriminate retention of electronic communications data is incompatible with the fundamental rights to privacy and data protection under

¹⁴⁴ Ibid, Articles 34, 35, and 36.

¹⁴⁵ Ibid, Articles 34(3), 35(5) and 36(5).

¹⁴⁶ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, pp.23-29.

¹⁴⁷ Article 5 (1) (a)-(c) of Regulation 2016/679 (GDPR).

¹⁴⁸ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, paras 66, 67 and 68.

¹⁴⁹ Article 5 (1) (a)-(c) and Article 6(1) (e) of Regulation 2016/679 (GDPR).

¹⁵⁰ Judgement of 13 May 2014, Google Spain v Agencia Española de Protección de Datos (AEPD), Case C-131/12, EU:C:2014:317.

¹⁵¹ Judgement of 21 December 2015, Tele2 Sverige AB v Post- och telestyrelsen, and Secretary of State for the Home Department v Tom Watson and Others (Incompatibility of Indiscriminate Data Retention) Joined Cases C-203/15 and C 698/15, EU:C:2016:970.

Article 8 of the EU Charter of Fundamental Rights,¹⁵² which is the same primary law that GDPR data protection requirements are largely built upon, solidify and reiterate.¹⁵³ This decision emphasised how significant the concepts of proportionality and necessity are when it comes to digital data retrieval procedures, aligning with principles enshrined in the GDPR and that are central in the case of the data processing mechanisms of the digital euro transaction system by controllers such as the ECB, National Central Banks, Payment Service Providers, and Providers of Support Services specifically in terms of abiding by data minimisation and purpose limitation requirements.¹⁵⁴

Another such CJEU Judgement this time based explicitly on the GDPR, that showcases the importance of the data minimisation principle is that of the *Norra Stockholm Bygg AB* C-268/21 case regarding types of evidence to be used in legal proceedings, with the ruling being that the *'the national court is required to have regard to the interests of the data subjects concerned and to balance them according to the circumstances of each case...duly taking into account the requirements arising from the principle of proportionality as well as, in particular, those resulting from the principle of data minimisation referred to in Article 5(1)(c)'* of the GDPR Regulation.¹⁵⁵ One more case where the CJEU categorically ruled that the principle of data minimisation was violated, underlining its significance, is the C-184/20 *OT v Vyriausioji Tarnybinės Etikos Komisija* case regarding a transparency publication online about a public officer's non-proportionately and irrelevantly processed personal data as part of the disclosure of the Lithuanian Chief Ethics Commission.¹⁵⁶

Additionally, when it comes to displaying the importance of the transparency requirement of the GDPR, this was prominent in the ruling of the CJEU *FF v Österreichische Datenschutzbehörde and CRIF GmbH* C-487/21 case, where the right of data subjects to have access to the types of their data being processed was reiterated in the ruling claiming that the data subject has *'the right to obtain from the controller a copy of the personal data undergoing processing means that the data subject must be given a faithful and intelligible reproduction of all those data'*.¹⁵⁷ Finally, a CJEU ruling emphasising the deeply interrelated GDPR requirements of

¹⁵² Charter of Fundamental Rights of the European Union, 2000, Article 8.

¹⁵³ Article 5 of Regulation 2016/679 (GDPR).

¹⁵⁴ Article 5 (1) (b) and (c) of Regulation 2016/679 (GDPR).

¹⁵⁵ Judgement of 2 March 2023, *Norra Stockholm Bygg AB vs Per Nycander AB and Entral AB*, (Minimisation of personal data) C-268/21, EU:C:2023:145.

¹⁵⁶ Judgement of 1 August 2022, *OT v Vyriausioji Tarnybinės Etikos Komisija (Violation of Data Minimisation Principle)* Case C-184/20, EU:C:2022:601.

¹⁵⁷ Judgement of 4 May 2023, *FF v Österreichische Datenschutzbehörde and CRIF GmbH (Right to Obtain From Controller a Copy of Data Processed)*, C-487/21, EU:C:2023:369.

purpose limitation and data minimisation, was that of the Digi C-77/21 case, determining whether further processing of personal data transferred to another test database was lawful, claiming that its compatibility with the purpose limitation requirement had to be assessed in regards to factors such as the *'nature of the personal data'* and *'any link between the purposes for which the personal data were collected and the purposes of the intended further processing'*.¹⁵⁸

Moving forward, subsidiary GDPR Articles that complement the three overarching requirements of transparency, data minimisation, and purpose limitation¹⁵⁹ as part of the rhizome of data protection principles, are Articles 12, 13 and 15¹⁶⁰ elaborating how transparency can be achieved and Articles 21, 24, 25, 26 and 32 on data controller responsibility for protecting data subjects and their right to object to processing based on their personal situation,¹⁶¹ transparent allocation of responsibilities of joint controllers in data processing,¹⁶² data protection by design and default and pseudonymisation,¹⁶³ security of processing¹⁶⁴ by controllers and processors as well as Articles 35 and 9 on the conduction of DPIAs and caution of processing of sensitive digital euro transaction-related data,¹⁶⁵ and 6(1) on limiting the processing of data to explicit and legitimate purposes.¹⁶⁶ What is more, Articles 13 and 15 can also be applied in terms of the need for the data privacy clause of the Proposal for a Regulation to be more transparent when it comes to the clarification of the categories of digital euro users' data processed by controllers of the digital euro transaction system at all its levels, as the data subjects have the right to obtain unambiguous information regarding this.¹⁶⁷ Also, Article 24 GDPR applies in terms of the need for Articles 34, 35, and 36 determining the data processing behaviours of the ECB, National Central Banks, Payment Service Providers and Providers of Support Services, to make more clear their respective allocated responsibilities in implementing data minimisation techniques as data controllers and processors, through clarifying the types of data to be processed and the way in which pseudonymisation can be achieved in an exhaustive and detailed manner¹⁶⁸ and

¹⁵⁸ Judgement of 20 October 2022, *Digi Távközlési és Szolgáltató Kft.v Nemzeti Adatvédelmi és Információszabadság Hatóság* (Digi Purpose Limitation) Case C-77/21, EU:C:2022:805.

¹⁵⁹ Article 5 (1) (a)-(c) of Regulation 2016/679 (GDPR).

¹⁶⁰ Articles 12, 13 and 15 of Regulation 2016/679 (GDPR).

¹⁶¹ Articles 21 and 24 of Regulation 2016/679 (GDPR).

¹⁶² Article 26 of Regulation 2016/679 (GDPR).

¹⁶³ Article 25 (1) and (2) of Regulation 2016/679 (GDPR).

¹⁶⁴ Article 32 (1) (a) and (b) of Regulation 2016/679 (GDPR).

¹⁶⁵ Article 35 and Article 9 (1) of Regulation 2016/679 (GDPR).

¹⁶⁶ Article 6 (1) of Regulation 2016/679 (GDPR).

¹⁶⁷ Articles 13 and 15 of Regulation 2016/679 (GDPR).

¹⁶⁸ Article 24 of Regulation 2016/679 (GDPR).

therefore safely avoiding ‘*data leaks that could compromise the funds of its users and the stability of the entire system*’.¹⁶⁹

3.2 Data Minimisation on Digital Euro Users

When it comes specifically to the data minimisation requirement,¹⁷⁰ Recital 39 of the GDPR emphatically expresses the importance of minimising the data for data processing activities, claiming that the data should be adequate, relevant and limited to what is necessary for the purposes for which they are processed.¹⁷¹ As expressed by the EDPS-EDPB Opinion, in order for this requirement to be attained by the Proposal for a Regulation, it is vital that the definitions of its Article 2 become more clear,¹⁷² so that the types of data collected from digital euro users and processed by the ECB, National Central Banks, Payment Service Providers, and Providers of Support Services when operating the procedures of the digital euro transaction system are guaranteed by design and by default to be unambiguous and confined to what is necessary.¹⁷³ This is a GDPR data minimisation-based axiomatic importance which was analogically demonstrated by the CJEU’s ruling in the *Norra Stockholm Bygg AB* case.¹⁷⁴

For example, the way in which the specification of Article 2’s digital euro user-related definitions can assist the compliance to the data minimisation requirement is by better defining the terms ‘*user identifier*’ and ‘*user alias*’ through also establishing a definition for ‘*unique digital euro payment account number*’¹⁷⁵ which are used in Annexes III and IV¹⁷⁶ of the analogous Articles 34 and 35 on Payment Service Providers and the ECB and National Central Banks listing them as the types of data categories to be processed by these controllers,¹⁷⁷ but however at the moment remain legally uncertain because of this issue of unclear definition. This is also the

¹⁶⁹ Pier Mario Lupinu (2021) ‘*Digital Euro: Opportunity or (Legal) Challenge?*’ In Social Science Research Network p.57

¹⁷⁰ Article 5 (1) (b) of Regulation 2016/679 (GDPR).

¹⁷¹ Recital 39 of Regulation 2016/679 (GDPR).

¹⁷² European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 28.

¹⁷³ Article 25 and Article 5 (1) (c) of Regulation 2016/679 (GDPR).

¹⁷⁴ Judgement of 2 March 2023, *Norra Stockholm Bygg AB vs Per Nycander AB and Entral AB*, (Minimisation of personal data) C-268/21, EU:C:2023:145.

¹⁷⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, paras 31 and 32.

¹⁷⁶ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annexes III and IV.

¹⁷⁷ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (2) and Article 35 (2).

case with the terms ‘*local storage device*’ and ‘*mobile device*’, which are seemingly used interchangeably in Annexes III and IV.¹⁷⁸

Additionally, as claimed by the EDPS and EDPB, Annex III¹⁷⁹ explaining the types of data categories to be processed by Payment Service Providers as per Article 34(2),¹⁸⁰ ‘*would benefit from further specification as to the exact type of data that can be processed by Payment Service Providers*’ making ‘*a clear definition of the types of personal data is all the more important*’¹⁸¹ to validly satisfy the legal basis of GDPR Article 6(1)(c) by precisely referring to it and not having unnecessary discretion when it comes to referring to its use.¹⁸² For example, as per paragraph 29 of the EDPB opinion, a clear specification is required on ‘*which type of data would fall under the category of transaction data*’¹⁸³ which is a term used in Article 37 allowing data retention on anti-money laundering grounds by the Financial Intelligence Unit¹⁸⁴ but is referring to the broad and poorly defined set of categories of various types of digital euro users’ transaction information in Annexes III, IV, and V¹⁸⁵ of the analogous proposed Regulation Articles 34(2), 35(2), and 36(2).¹⁸⁶

Moreover, the EDPS-EDPB Opinion criticises the Proposal for ‘*absence of listed categories*’ of types of digital euro users’ personal data processed by Payment Service Providers in paragraph 76,¹⁸⁷ risking the possibility of inclusion of sensitive personal related to digital euro users’ financial status and indirectly unduly socioeconomically profiling them due to this as per Article 9(1)GDPR.¹⁸⁸ Therefore, in the same paragraph, the EDPS and EDPB are once more urging elaboration and

¹⁷⁸ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 30.

¹⁷⁹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III.

¹⁸⁰ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (2).

¹⁸¹ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 74.

¹⁸² Article 25 and Article 6 (1) (c) of Regulation 2016/679 (GDPR).

¹⁸³ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 29.

¹⁸⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 37.

¹⁸⁵ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (1) (iv), Annex IV(1) (ii) and (3) and Annex V(ii) and (iii).

¹⁸⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Articles 34(2), 35(2) and 36(2).

¹⁸⁷ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 76.

¹⁸⁸ Article 9 (1) of Regulation 2016/679 (GDPR).

clarity on several types of data¹⁸⁹ which are an integral part of the list of Annex III,¹⁹⁰ to ensure that they are ‘adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed’ as per the data minimisation principle of Article 5(1)(c) of the GDPR.¹⁹¹ This need for specifying and constraining the types of data processed by Payment Service Providers is also reinforced in Article 94 of the PSD2 Directive, which emphasises the importance of ensuring the security of personal data processed in the context of payment services, as to avoid unnecessary access and retainment of payment service users’ data.¹⁹² Also, this legal problem of non-specification of types of data to be processed by Payment Service Providers as per Article 34(2)¹⁹³ and its Annex III¹⁹⁴ can be paralleled to the CJEU’s ruling against the indiscriminate data retention activities in the situation of the Tele2-Watson joined cases, where the proportionality and the necessity of delimitating the purposes and specifying the categories of data retrieved and processed during controlling procedures of electronic communications data, which in this case could be paralleled with digital euro users’ transaction-related data, were not taken into account to a considerable degree.¹⁹⁵

In continuation, the clarifications on the types of data processed by Payment Service Providers that should be made in terms of the legal provision of Article 34(2)¹⁹⁶ and Annex III¹⁹⁷ to ensure data minimisation¹⁹⁸ are firstly in terms of the ‘user identifier’ which according to Annex III (3)(i)¹⁹⁹ can be processed for providing the offline digital euro modality according to the public interest purposes of Article 34(1)(c)²⁰⁰

¹⁸⁹ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, paras 75 and 76.

¹⁹⁰ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (1) (i), (iii) and (iv), (3)(i) and (2)(iii).

¹⁹¹ Article 5 (1) (c) of Regulation 2016/679 (GDPR).

¹⁹² Article 94 of Directive 2015/2366 (PSD2).

¹⁹³ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34(2).

¹⁹⁴ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III.

¹⁹⁵ Judgement of 21 December 2015, *Tele2 Sverige AB v Post- och telestyrelsen, and Secretary of State for the Home Department v Tom Watson and Others (Incompatibility of Indiscriminate Data Retention)* Joined Cases C-203/15 and C 698/15, EU:C:2016:970.

¹⁹⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (2).

¹⁹⁷ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III.

¹⁹⁸ Article 5 (1)(c) of Regulation 2016/679 (GDPR).

¹⁹⁹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (3) (i).

²⁰⁰ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (1) (c).

however, is in contrast with Article 2(27)'s definition of it being a unique identifier created by Payment Service Providers for online digital euro purposes.²⁰¹

Furthermore, this unclarity and lack of delimitation of what kind of piece of data the '*user identifier*' specifically is, indicates the possible inclusion of the '*name of the local storage device holder*'²⁰² but however is not limited to only this because of the use of the word '*including*'.²⁰³ Secondly, another type of data needing specification and clarification is that of the '*information on digital euro payment accounts*' denoted in Annex III (1), point (iii) which may include '*information on digital euro holdings of the digital euro user and the unique digital euro payment account number*'²⁰⁴ but is not explicitly limited to that.²⁰⁵ Thirdly, '*information on digital euro payment transactions*', to clarify what other types of data the term '*including*' in the wording in Annex III (iv)²⁰⁶ vaguely implies as data categories to be processed by Payment Service Providers as per paragraph 75 of the Opinion, apart from '*the transaction identifier and the transaction amount*'.²⁰⁷ Fourthly, the '*unique digital euro payment account number*' in Annex III (2) (iii)²⁰⁸ which as previously mentioned completely lacks definition under Article 2 of the Proposal for a Regulation,²⁰⁹ making it unclear '*what would be included in this identifier, nor how and by whom it would be generated, whether in a decentralised manner with each Payment Service Provider defining its own format or in a more centralised way*', such as by the ECB.²¹⁰ To end, it is alarming that as pointed out in paragraph 76 of the EDPS-EDPB Joint Opinion,²¹¹ for the purposes 34(1)(d) and (e) regarding the generally posed aim for compliance with Union sanctions and fraud and terrorism

²⁰¹ Ibid, Article 2 (27).

²⁰² European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 75.

²⁰³ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (1) (i), (2) (i) and (3) (i).

²⁰⁴ Ibid, Annex III (1) (iii).

²⁰⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 75.

²⁰⁶ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (1) (iv).

²⁰⁷ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 75.

²⁰⁸ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III (2) (iii).

²⁰⁹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 2.

²¹⁰ European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, para. 75.

²¹¹ Ibid, para. 75.

detection and prevention,²¹² there is not only a lack of specification of data categories to be processed by Payment Service Providers, but a complete absence of them as per Annex III,²¹³ which directly violates the data minimisation principle of the GDPR.²¹⁴ By extension, Article 4(1)(c) of Regulation 2018/1725 also reiterates the need for the ECB in particular as an EU institution to apply the GDPR-rooted data minimisation requirement in terms of its obligation for delineating the types of data to be processed, making sure they are necessary for the purposes for which they shall be processed.²¹⁵ Thereafter, if the above data minimisation considerations are not transparently accounted for²¹⁶ and the types of data to be processed by Payment Service Providers are not elaborated in Article 34(2) of the Proposal for a Regulation²¹⁷ and its analogous Annex III,²¹⁸ then Payment Service Providers, which act as finance technology companies that are fundamental to the operability of the digital euro system, are failing to properly apply the GDPR in its full essence.²¹⁹

Next, when it comes to the role of the ECB and National Central Banks as controllers and joint controllers of digital euro users' data²²⁰ and in particular the types of data they can process outlined in Article 35(2)²²¹ and the analogous Annex IV,²²² this is also criticised in paragraph 81 of the EDPS-EDPB Opinion as being problematically non-exhaustive.²²³ This is specifically true in the phrasing of Annex IV (1) (ii) claiming the processing by ECB and National Central Banks of *'information on online digital euro payment transactions, information linked to a unique digital euro payment account number, including the transaction amount'*²²⁴ and Annex IV(3) referring to processing of *'the data required for counterfeit analysis of offline digital euro payment transactions: information on the local storage device, including the*

²¹² Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (1) (d) and (e).

²¹³ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III.

²¹⁴ Article 5 (1) (c) of Regulation 2016/679 (GDPR).

²¹⁵ Article 4(1) (b) and (c) of Regulation 2018/1725 (EUDPR).

²¹⁶ Article 5 (1) (a) and (c) of Regulation 2016/679 (GDPR).

²¹⁷ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (2).

²¹⁸ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III.

²¹⁹ Dorfleitner G., Hornuf L., Kreppmeier J. (2023) *'Promise not fulfilled: FinTech, Data Privacy, and the GDPR'* In Electronic Markets, Volume 33, Issue 33, p.33.

²²⁰ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (5).

²²¹ Ibid, Article 35 (2).

²²² Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV.

²²³ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 81.

²²⁴ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV (1) (ii).

*local storage device number*²²⁵ where the term including is scrutinised as being an obstacle to exhaustively naming the types of data to be processed,²²⁶ hence once again failing in fully aligning with the data minimisation GDPR requirement²²⁷ and addressing the CBDC citizen payment privacy problem.²²⁸

Finally, in the case of Providers of Support Services as controllers and processors of digital euro users' data,²²⁹ the word '*including*' used in the respective Annex V (i)-(iii)²³⁰ of Article 36(2),²³¹ causes the same data minimisation-related deficit issue, as it fails to contain an exhaustive list of types of personal data to be processed by them when in the role of a controller,²³² and thereafter it is recommended that '*further clarifications be made as to the type of personal data that could be processed by Providers of Support Services under these categories*' as per paragraph 85 of the EDPS-EDPB Opinion.²³³ Hence, due to the fact that the types of categories are not clearly stated in relation to the specified purposes, as well as the fact of absence of '*listed categories of personal data to be processed by the Providers of Support Services when operating the exchange of messages for the resolution of disputes*' as per Article 27(2)²³⁴ which should be additionally inserted in Annex V according to the EDPS and EDPB,²³⁵ Articles 25(1) and (2) and 32(1)(a) GDPR are also applicable.²³⁶ This occurs because the provisions of Articles 34(4), 35(4) and (8) and 36(4)²³⁷ are not fully able to apply pseudonymisation as a technique to ensure data minimisation by design and by default since it is currently the case that the types of data that are to be originally collected for processing are not yet exhaustively listed and specified in their respective Annexes,²³⁸ which is the first step towards

²²⁵ Ibid, Annex IV (3).

²²⁶ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 81.

²²⁷ Article 5 (1) (c) of Regulation 2016/679 (GDPR).

²²⁸ Avgouleas, E., Blair, W. (2024) 'A critical evaluation of Central Bank Digital Currencies (CBDCs): payments' final frontier?' In Capital Markets Law Journal, Volume 19, Issue 2, p. 103.

²²⁹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 36 (5).

²³⁰ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex V (i)-(iii).

²³¹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 36 (2).

²³² Article 5 (1) (c) of Regulation 2016/679 (GDPR).

²³³ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 85.

²³⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 27 (2).

²³⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 86.

²³⁶ Article 25 (1) and (2) and Article 32 (1) (a) of Regulation 2016/679 (GDPR).

²³⁷ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (4), Article 35 (4) and (8) and Article 36 (4).

²³⁸ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex III, IV, and V.

exhaustively outlining what exact pseudonymisation measures will be taken by each controller in regards to these data, to ultimately ensure security of data processing and by extension, that they are only processed for specific purposes.²³⁹ Thus, only if the pseudonymisation technique is technically and organisationally clarified by first specifying the types of data originally collected,²⁴⁰ then the risk of privacy-washing can be set aside and although it would not be completely anonymous,²⁴¹ it should still be possible to avoid the direct identification of digital euro users.

This is reiterated in paragraph 78 of the EDPB Joint Opinion's criticism when claiming that specifying pseudonymisation measures '*should ensure that personal data are pseudonymised in such a manner that these data can no longer be attributed by the ECB or the national central banks to an individual digital euro user without the use of additional information*'.²⁴² Moreover, what this goes to show is that the method of pseudonymisation to protect the digital euro users' complete authentication in relation to their data needs to be more specified in order to address this major problem of '*legal nature concerning the digital euro...related to the traceability and accessibility of transactions by public authorities*'.²⁴³ Thus, because of the lingual, legal provision unclarities of Articles 34(2), 35(2), and 36(2) and their analogous Annexes regarding the specified characteristics of the types of data collected²⁴⁴ as well as the vagueness regarding pseudonymisation techniques to protect digital euro users data²⁴⁵ in Articles 34(4), 35(4) and (8), and 36(4) and deficient term definitions of Article 2,²⁴⁶ the GDPR's data minimisation requirement is violated,²⁴⁷ similarly to the emblematic *OT v Vyriausioji Tarnybinės Etikos Komisija* case ruling.²⁴⁸

²³⁹ Article 5 (1) (b) and (c), Article 25 (1) and (2) and Article 32 (1) (a) of Regulation 2016/679 (GDPR).

²⁴⁰ Article 5 (1) (b) and Article 25 (1) of Regulation 2016/679 (GDPR).

²⁴¹ Zeno-Zencovich, Vincenzo (2023), '*Digital Euro as a Platform and Its Private Law Implications*' In *Media Laws-Law and Policy of the Media in a Comparative Perspective*, pp.10-11.

²⁴² European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 78.

²⁴³ Giovanni Zaccaroni, (2024) '*All that glitters is not gold?: The digital euro between myth and reality*' In *Maastricht Journal of Comparative Law*, Volume 30, Issue 4, pp.466-467.

²⁴⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (2), Article 35 (2) and Article 36 (2).

²⁴⁵ Article 25 (1) of Regulation 2016/679 (GDPR).

²⁴⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 2, Article 34 (4), Article 35 (4) and (8) and Article 36 (4).

²⁴⁷ Article 5 (1) (c) of Regulation 2016/679 (GDPR).

²⁴⁸ Judgement of 1 August 2022, *OT v Vyriausioji Tarnybinės Etikos Komisija (Violation of Data Minimisation Principle)* Case C-184/20, EU:C:2022:601.

3.3 Purpose Limitation and Transparency of Data Processing

Moving forward, in regard to the purpose limitation requirement of digital euro users' data processing, this is also currently unclear and unspecified and also needs to be transparent according to the GDPR.²⁴⁹ This is in order to further ensure the objective-wise delimited, lawful, and safeguarded processing of their data by all involved controller entities, namely the ECB, National Central Banks, Payment Service Providers and Providers of Support Services in complementation to the data minimisation principle examined in the previous section. However, the purposes for which digital euro users' data are to be processed are unspecified and not clearly and exhaustively delineated in Articles 34(1), 35(1), and 36(1) of the Proposal for a Regulation making them lack legitimacy simultaneously.²⁵⁰ More specifically, as per paragraph 69 of the EDPS-EDPB Joint Opinion *'the reference to the word "including" in Article 34(1)(a) and (c) of the Proposal raises legal uncertainty as to the exact purposes for which Payment Service Providers may process personal data'* and that these Payment Service Provider data controlling purposes should be expressed more clearly and precisely in terms of explicit and non-exhaustive wording in 34(1) (a) and (c),²⁵¹ claiming that their *'purposes should not be expressed in general terms, but rather in a clear and precise manner and be objectively connected to the tasks entrusted to them under the Proposal'*.²⁵² Also, paragraph 41 of the EDPS-EDPB Joint Opinion claims that the purposes for which Payment Service Providers process the data of Annex III (1)²⁵³ as per Article 34(2)²⁵⁴ are unclear in terms of how they enforce *'holding limits in practice and what safeguards are in place for digital euro users, such as the right to object to or appeal decisions based on the enforcement of the holding limit'*²⁵⁵ as per Articles 16 of the Proposal for a Regulation²⁵⁶ and 21 GDPR.²⁵⁷

²⁴⁹ Article 5 (1) (a) and (b) of Regulation 2016/679 (GDPR).

²⁵⁰ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (1), Article 35 (1) and Article 36 (1).

²⁵¹ Ibid, Article 34 (1) (a) and (c).

²⁵² European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023 para. 69.

²⁵³ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex V (i)-(iii).

²⁵⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (2).

²⁵⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 41.

²⁵⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 16.

²⁵⁷ Article 21 of Regulation 2016/679 (GDPR).

According to paragraphs 71 and 72 of the EDPS-EDPB Opinion,²⁵⁸ the Payment Service Providers' data processing purposes listed in Article 34(1)(a)-(e) of the Proposal for a Regulation²⁵⁹ are unclear and unspecified as they do not explicitly and transparently mention that they result from a precise legal obligation based on GDPR Article 6(1)(c).²⁶⁰ What is more, according to paragraph 79 of the Opinion, the purpose delimitation of the ECB and National Central Banks for processing digital euro users' data in terms of *'performing tasks in the public interest or exercise of official authority'* should be clarified in reference to the legal basis for this processing of personal data carried out,²⁶¹ something that is also reiterated legally with specific application to the ECB as an EU institution by Regulation 2018/1725 Article 4(1)(b).²⁶² To add, as expressed in paragraph 84 of the Opinion, the Proposal for a Regulation currently *'does not provide sufficient information on the actual tasks that will be performed by the Providers of Support Services in the context of the dispute resolution and fraud detection mechanisms'*, in this way blurring the purpose limitation from their end in their shared responsibility as controllers of data processing with potentially ECB-appointed operators,²⁶³ requiring further explicit specification of what exact allocated tasks they will execute for these purposes to become more legally certain, and should otherwise completely remove the legal provision of Article 36(5) which qualifies Providers of Support Services as controllers of data in all cases if their exact tasks are not specified and their purposes remain lacking legitimacy.²⁶⁴

Another data protection deficit of Article 35(6) related to the purpose limitation requirement is its lack of clarity when it comes to the other further purposes and context of tasks of the ECB and National Central Banks for which digital euro users' data might be processed,²⁶⁵ as according to GDPR Article 13(3), *'where the controller intends to further process the personal data for a purpose other than that for which the personal data were collected, the controller shall provide the data*

²⁵⁸ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, paras 71 and 72.

²⁵⁹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34(1) (a)-(e).

²⁶⁰ Article 6 (1) (c) of Regulation 2016/679 (GDPR).

²⁶¹ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 79.

²⁶² Article 4(1) (b) of Regulation 2018/1725 (EUDPR).

²⁶³ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 36 (1) (a) and (b) and (5).

²⁶⁴ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 84.

²⁶⁵ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (6).

subject prior to that further processing with information on that other purpose and with any relevant further information', highlighting the need to provide digital euro users with explicit information about these purposes in line with GDPR Article 13(1)(c), proving compatibility with the original purposes.²⁶⁶ Insofar as the ECB and National Central Banks comply with the purpose limitation requirements of further processing as expressed by the CJEU in the Digi case in regard to first outlining clearly the nature and types of *'involved'* personal data to be processed for the other tasks and then explaining the exact relevance of the extended purposes²⁶⁷ of these other ECB tasks to the original purposes of Articles 35(1) and (7) of the Proposal for a Regulation which process digital euro users' personal data exclusively for issuing the digital euro transaction system, settling disputes and detecting fraud, full consistency with the GDPR can be ensured.²⁶⁸

To ensure this therefore, Article 35(6) also needs more transparency and elaboration in terms of the types of digital euro user-related data to be processed as per Article 35(2) and for exactly what *'other tasks'* and *'powers'* personal data processing could commence.²⁶⁹ In more detail, because digital euro users data can be also processed for the numerous extended purposes of other ECB tasks and powers according to Article 35(6), it is all the more important to transparently and exhaustively outline the types of data that will be collected in relation to digital euro users' to ensure full data minimisation for these extended purposes as well as to translucently outline the exact purposes exhaustively using precise wording²⁷⁰ at a highly detailed enriched Annex subsection reference, without using the word *'including'* and without only giving the two purpose examples of the credit institution and transaction system oversight but rather listing all the purposes by name scrupulously,²⁷¹ as well as referring explicitly to the legal basis of Article 6(1)(e) GDPR as recommended in paragraph 79 of the EDPS-EDPB Opinion.²⁷² The importance of a transparently elaborated legal basis under Article 6 of the GDPR for the processing of data, was also demonstrated recently in the *Meta Platforms and Others v Bundeskartellamt* C-

²⁶⁶ Article 13 (3) and (1) (c) of Regulation 2016/679 (GDPR).

²⁶⁷ Judgement of 20 October 2022, *Digi Távközlési és Szolgáltató Kft. v Nemzeti Adatvédelmi és Információszabadság Hatóság (Digi Purpose Limitation)* Case C-77/2, EU:C:2022:805.

²⁶⁸ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (1) and (7).

²⁶⁹ *Ibid*, Article 35 (6) and (2).

²⁷⁰ Article 15 (1) (a)-(c) and Article 12 (1) of Regulation 2016/679 (GDPR).

²⁷¹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (6).

²⁷² European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 79.

252/21 case regarding the improper use of ‘Off-Facebook Activity’ data.²⁷³ Another important purpose limitation-related uncertainty is that of 35(8) and the ability of the ECB and National Central Banks to alone or jointly ‘*establish a single access point of digital euro user identifiers and the related digital euro holding limits*’,²⁷⁴ an action which according to paragraph 40 of the Opinion, needs more translucent clarification in terms of justifying its necessity and proportionality and does not contain specific ‘*information on how data protection by design and by default is to be implemented in this regard*’.²⁷⁵

Furthermore, the current privacy clause of the Proposal for a Regulation fails to meet the transparency requirement of GDPR Article 5(1) (a) in terms of the specific legal provisions of GDPR Article 13(1) (c) and (e) on providing digital euro users as the data subject with information on ‘*the purposes of the processing for which the personal data are intended as well as the legal basis for the processing*’ and the clear ‘*recipients or categories of recipients of the personal data*’ that are to be processors for these still unclear intended purposes of the ECB, National Central Banks, Payment Service Providers and Providers of Support Services.²⁷⁶ A similar CJEU judgement related to the transparency requirement as specified by the legal provisions of Article 13(1)(e) was the Bara C-201/14 case and the insufficient and non-transparent informing of data subjects on the processing and transfer of their finance-related data to an insurance service.²⁷⁷

Moreover, the Proposal for a Regulation fails to specifically implement the transparency requirement in accordance with GDPR Article 12(1) as it does not provide digital euro users with information about what exactly are their data that are to be processed in a ‘*concise, transparent, intelligible and easily accessible form, using clear and plain language*’,²⁷⁸ something that is an indisputable data subject right according also to the FF v Österreichische Datenschutzbehörde and CRIF GmbH case.²⁷⁹ This legal prohibition against the inability to translucently provide digital euro users with their right as data subjects to be properly informed about how

²⁷³ Judgement of 4 July 2023, *Meta Platforms and Others v Bundeskartellamt (Legal Bases For Data Processing)* C-252/21, EU:C:2023:537.

²⁷⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 35 (8).

²⁷⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 40.

²⁷⁶ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 5 (1) (a) and Article 13 (1) (c) and (e).

²⁷⁷ Judgement of 1 October 2015, *Smaranda Bara v Președintele Casei Naționale de Asigurări de Sănătate and ANAF (Transparency of Data Processing)* C-201/1, EU:C:2015:638.

²⁷⁸ Article 12 (1) of Regulation 2016/679 (GDPR).

²⁷⁹ Judgement of 4 May 2023, *FF v Österreichische Datenschutzbehörde and CRIF GmbH (Right to Obtain From Controller a Copy of Data Processed)*, C-487/21, EU:C:2023:369.

their data is being processed specifically doubly applying for the ECB is also reinforced by Article 9 of Regulation 2018/1725.²⁸⁰

Finally, the whole privacy clause of the Proposal for a Regulation containing Articles 34, 35, and 36, is inadequate in terms of ensuring transparency through the legal provisions of Article 15(1) (a) and b), in providing to the digital euro users the clearly delimited purposes of the processing and the categories of personal data concerned in this processing.²⁸¹ Thereafter, the EDPS-EDPB Joint Opinion also criticises Article 34(3) and Payment Service Providers in a targeted manner for not having a transparent enough purpose limitation due to the aspect of blurred allocation of responsibilities as joint controllers when,²⁸² claiming that *‘in accordance with Article 26(1) GDPR, in the absence of respective responsibilities determined in the context of this Proposal, it will be for the joint controllers to determine their respective responsibilities with regard to such processing, in particular as regards the exercise of data subject's rights and the obligations to provide information’*²⁸³ which causes confusion on who is the exact recipient of digital euro users’ data in each scenario and also goes against GDPR Article 13(1)(e). This observation is most importantly in line with Article 13 GDPR, on data subjects' right to information on data processing procedures but also Article 26(1) on joint controllers’ obligation to comply with transparent processing of digital euro users’ data, with the specific GDPR Article paragraph claiming that they should *‘in a transparent manner determine their respective responsibilities for compliance with the obligations under this Regulation, in particular as regards the exercising of the rights of the data subject and their respective duties’*, perhaps in the form of a linguistically clear joint controller agreement which could be added as a part of the Annexes.²⁸⁴

3.4 Lack of DPIAs and Wording Uncertainty

Ultimately, as emphasised by the EDPS-EDPB Joint Opinion, DPIAs should be conducted to ensure absolute compliance with the GDPR transparency requirement, as well as in the sense of data controller accountability,²⁸⁵ and amendments to

²⁸⁰ Article 9 of Regulation 2018/1725 (EUDPR).

²⁸¹ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 5 (1) (a) and Article 15 (1) (a) and (b).

²⁸² Ibid, Article 34 (3).

²⁸³ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 77.

²⁸⁴ Article 26 (1) and Article 13 (1) (e) of Regulation 2016/679 (GDPR).

²⁸⁵ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 101.

problematic, ambiguous wording such as the term *‘including’* should be considered,²⁸⁶ to translucently fulfil the data minimisation and purpose limitation GDPR requirements by exhaustively listing the types of digital euro user data that are to be accessed and processed and delimitating the purposes for this processing clearly.²⁸⁷ These DPIAs should be conducted by all data controller entities processing digital euro users’ data in all dimensions and circumstances of the digital euro transaction system, in particular by the ECB, National Central Banks, Payment Service Providers, and Providers of Support Services, to ensure data protection by design and by default according to GDPR Article 25.²⁸⁸ It is also stressed in the concluding remarks of the EDPS-EDPB Opinion paragraph 101 that *‘all digital euro controllers and joint controllers to perform a data protection impact assessment, to the extent that the requirements of Article 35 GDPR or Article 39 EUDPR...and ideally to publish this DPIA’*, which re-emphasises the need for the transparency requirement to be met to a greater extent by the unclear language of the current wording in the data protection clause of the Proposal for a Regulation.²⁸⁹ What is more, as stated in paragraphs 97 and 98 of the Opinion, more wording clarifications remain to be made in terms of avoiding any doubts regarding privacy and personal data protection in the procedural connection of the proposed Regulation’s Article 37 on Anti-Money Laundering practices of the offline digital euro modality²⁹⁰ and Annex IV(3)²⁹¹ of Article 35(2) *‘which provides that the Eurosystem can read all information on the local storage device for the purpose of counterfeit analysis of offline digital euro payment transactions’* such as *‘funding and defunding’*, which would ensure the clear segregation of digital euro users’ data in the local storage device when it comes to offline and low-value online transactions.²⁹²

Moving forward, the Proposal for a Regulation in its current form does not explicitly mention the obligation of all controllers to conduct DPIAs throughout any of the paragraphs of Articles 34, 35, and 36 of its data privacy clause.²⁹³ This should occur, according to paragraph 102 of the Opinion, because the processing of digital euro

²⁸⁶ Ibid, para. 81.

²⁸⁷ Article 26 (1) and Article 5 (1) (a)-(c) of Regulation 2016/679 (GDPR).

²⁸⁸ Article 25 (1) and (2) of Regulation 2016/679 (GDPR).

²⁸⁹ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 101.

²⁹⁰ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 37.

²⁹¹ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annex IV (3).

²⁹² European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, paras 97 and 98.

²⁹³ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Articles 34, 35, and 36.

users' data by the ECB 'would fulfil at least three of the criteria laid out in the EDPB guidelines on DPIAs' such as the 'processing of sensitive personal data as it relates to digital euro users' finances and large scale processing'.²⁹⁴ In this statement, the use of the term sensitive data is an indirect reference to the risk of breaching Article 9 GDPR as a side-effect inappropriately potentially revealing digital euro users' unique socioeconomic situations and profiles, if the types of data and purposes for their processing are not transparently outlined, specified clearly and evaluated through a DPIA by all data controlling entities and indeterminacy of digital euro users' data processing persists.²⁹⁵

This specified DPIA obligation would ensure that the ECB would exercise its monetary policy formulation powers under the framework of the Proposal for a Regulation and its primary law basis of Article 133 TFEU,²⁹⁶ while transparently addressing the privacy feature concerns of the digital euro issuing system.²⁹⁷ That being said, the wording unclarities of the Proposal for a Regulation amplify legal uncertainty chasms in terms of the lack of a controller-wide transparency and accountability obligation for conducting DPIAs and the need for specifying the purpose limitations and data categories that digital euro users' information is processed for within them, and are a concerning reflection of its current inability to fully reach the GDPR requirements of transparency, data minimisation, and purpose limitation, challenging the viability of the digital euro as a transaction system.²⁹⁸ Thus, the conduction of a DPIA by the ECB would reinforce it as having a clear and limited mandate which demonstrates transparent accountability when establishing the digital euro's privacy design features²⁹⁹ and the wording specifications of Articles 34, 35, and 36 which should explicitly mention as part of the legal provisions the obligation for DPIAs to be executed by the ECB, National Central Banks, Payment Service Providers, and Providers of Support Services, would complement this effort holistically in all of the interconnected dimensions of the digital euro transaction infrastructure.³⁰⁰

²⁹⁴ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, para. 102.

²⁹⁵ Article 9 (1) of Regulation 2016/679 (GDPR).

²⁹⁶ Treaty on the Functioning of the European Union, 2007, Article 133.

²⁹⁷ Seraina Grünewald, Zellweger-Gutknecht C, Geva B.(2021) 'Digital euro and ECB powers' In Common Market Law Review, Volume 58, Issue 4, p.14.

²⁹⁸ Stynes, Odhran (2021) 'Bringing the Euro into the Twenty-First Century: Key Legal Issues for the European Central Bank to Consider in the Development and Issuance of a European Central Bank Digital Currency' University College Dublin Law Review, p.45.

²⁹⁹ Seraina Grünewald (2023) 'Digital euro and Accountability of the European Central Bank' In Maastricht Journal of European and Comparative Law, pp.445-450.

³⁰⁰ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, paras 101, 85, 81 and 75.

4 Conclusion: Balancing Digital Euro Creation and Data Protection

In conclusion, to directly answer the research question: *'How can the requirements of transparency, data minimisation, and purpose limitation in the GDPR inhibit the establishment of a digital euro?'*, these GDPR requirements of Articles 5(1) (a)-(c),³⁰¹ inhibit the realisation of the digital euro due to the fact that they are not fully realised in the data privacy clause of the Proposal for a Regulation.³⁰² More specifically, this means that the specific types of digital euro users' data to be processed and the purposes for their processing by the ECB, National Central Banks, Payment Service Providers, and Providers of Support Services in their role as data controllers and joint data controllers of different dimensions and circumstantial scenarios of the digital euro system, are not transparently and exhaustively delineated in terms of wording in Articles 34, 35, and 36 as well as particularly in their analogous Annexes V, IV, and III.³⁰³ More specifically, this legal uncertainty and GDPR-related drawback should be addressed mainly in the first and second paragraphs of these Articles and the unclear wording of their subparagraphs.³⁰⁴ To fully comply with the GDPR's transparency, data minimisation, and purpose limitation requirements, they must lucidly specify and elaborate using clear language, the purposes for which data is being processed as well as in terms of the legal basis of that processing in public interest, and translucently delineate what exact data categories of digital euro users' data will be accessed and utilised in an exhaustive, detailed, in-depth and thorough manner, assisted by the enriching of the equivalent Annex sections.³⁰⁵

The balance between the creation and functionality of a digital euro system of electronic numismatic transactions that also complies with the GDPR legal obligation of protecting digital euro users' account and payment-related data, can be found through robust amendments of wording-related legal clarity that further address, satisfy and comply with the GDPR-rooted data protection nomocratic requirements of transparency, data minimisation, and purpose limitation in a

³⁰¹ Article 5 (1) (a)-(c) of Regulation 2016/679 (GDPR).

³⁰² Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Articles 34, 35, and 36.

³⁰³ Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369), Annexes III, IV, and V.

³⁰⁴ Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369), Article 34 (1) and (2), Article 35 (1) and (2) and Article 36 (1) and (2).

³⁰⁵ Article 5 (1) (a)-(c). and Article 6 (1) (c) and (e) of Regulation 2016/679 (GDPR).

methodically exhaustive manner when outlining the data processing behavioural rulebook in the legal provisions of Articles 34, 35, and 36, assisting this clarification using the Annex document. This builds on appositely applied, interrelated, and reciprocally reinforcing GRPR data protection Articles, which emphatically reinforce the EDPS-EDPB Joint Opinion on the chasms in regards to the unclarity and obscurity of what data is gathered and processed by controllers, as for example with the problematic term '*including*' as a vague polysyndeton blurring the privacy clause, and for what exact purposes it is gathered and processed by them in each situation, which is the data privacy deficit of the currently adopted proposed Regulation that is also deeply rooted in the vague and insufficient definitions of terms used in relation to digital euro users' data, as expressed in Article 2 of the Proposal for a Regulation.³⁰⁶

Thus, all in all, if the legal need for the interconnected and mutually reinforcing principles of transparency, data minimisation, and purpose limitation of the GDPR is fully attained and echoed clearly in the Proposal for a Regulation for the establishment of the digital euro using explicit and meticulous language, the nomic balance to this data privacy-public interest processing dilemma can be found and the digital euro electronic transaction system can be established without identification, crime and personal data protection concerns over its users, enabling cross-sectoral consistency and cohesive legal synergy. Once these three GDPR principle requirements are sufficiently complied with in lingual clarity in terms of precise wording, and frequent DPIA's are obligatorily conducted to translucently reinforce the sedulous accountability of controllers and processors, the data privacy drawback implications of the digital euro can be resolved.³⁰⁷ As for future research, this could focus on applying GDPR requirements to final draft amendments of the proposed Regulation, as well as in regard to the EU Digital Identity Wallet element, and to the second Proposal of the digital euro package focusing on non-Eurozone-based Payment Service Providers.

³⁰⁶ European Data Protection Supervisor and European Data Protection Board Joint Opinion adopted 17 October 2023, paras 28, 71, 70, 79, 81,84 and 85.

³⁰⁷ Article 5 (1) (a)-(c), Article 35 and Article 25 (1) of Regulation 2016/679 (GDPR).

5 Bibliography

Treaties

Treaty on the Functioning of the European Union, 2007.

EU Conventions

Charter of Fundamental Rights of the European Union, 2000.

EU Regulations

EU General Data Protection Regulation (GDPR) 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.

Regulation (EU) 2018/1725 (EUDPR) of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC.

EU Directives

Directive (EU) 2015/2366, "Payment Services Directive 2" (PSD2).

Official EU Documents

Annexes to the Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro (COM:2023:369).

European Central Bank, '*Digital Euro: The Next Step in the Advancement of Our Currency*', p.1-18, Available at https://www.ecb.europa.eu/euro/digital_euro/timeline/profuse/shared/pdf//ecb.dedocs231018_1.en.pdf.

European Data Protection Supervisor and European Data Protection Board Joint Opinion 02/2023 adopted 17 October 2023 on the Proposal for a Regulation of

the European Parliament and of the Council on the establishment of the digital euro.

European Parliament Economic Governance and EMU Scrutiny Unit, *Briefing: What's Next for the Digital Euro?*, p.8, Available at [https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747854/IPOL_BRI\(2023\)747854_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747854/IPOL_BRI(2023)747854_EN.pdf).

Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro, June 28, 2023 (COM 2023:369).

Literature

Monographs

Krzysztofek, M.,(2021) *'GDPR : Personal Data Protection in the European Union'*
In Wolters Kluwer Law International, pp.1-318.

Journal Articles

Avgouleas, E., Blair, W. (2024) *'A critical evaluation of Central Bank Digital Currencies (CBDCs): payments' final frontier?'* In Capital Markets Law Journal, Volume 19, Issue 2, p. 103-112.

Dorfleitner G.,Hornuf L., Kreppmeier J.(2023) *'Promise not fulfilled: FinTech, Data Privacy, and the GDPR'* In Electronic Markets, Volume 33, Issue 33, pp.1-29.

Giovanni Zaccaroni, (2024) *'All that glitters is not gold?: The digital euro between myth and reality'* In Maastricht Journal of Comparative Law, Volume 30, Issue 4, pp.359-540.

Jan M. Smiths (2017) *'What is Legal Doctrine: On The Aims and Methods of Legal Dogmatic Research'* in Rob van Gestel, Hans W-Micklitz, and Edward L. Rubin (eds), *Rethinking Legal Scholarship: A Transatlantic Dialogue* (Cambridge University Press 2017), p.207-228.

Pier Mario Lupinu (2021) *'Digital Euro: Opportunity or (Legal) Challenge?'* In Social Science Research Network, pp.37-62.

Seraina Grünewald, Zellweger-Gutknecht C, Geva B.(2021) *'Digital euro and ECB Powers'* In Common Market Law Review, Volume 58, Issue 4, pp. 1029 -1056.

Seraina Grünwald (2023) '*Digital euro and Accountability of the European Central Bank*' In Maastrich Journal of European and Comparative Law, Volume 30, Issue 4, pp.359-540.

Stynes, Odhran (2021) '*Bringing the Euro into the Twenty-First Century: Key Legal Issues for the European Central Bank to Consider in the Development and Issuance of a European Central Bank Digital Currency*' University College Dublin Law Review, Volume 21, Issue 45, p.45.

Zeno-Zencovich, Vincenzo (2023), '*Digital Euro as a Platform and Its Private Law Implications*' In Media Laws-Law and Policy of the Media in a Comparative Perspective, pp.1-19.

Case Law

Court of Justice of the European Union

Judgement of 13 May 2014, *Google Spain v Agencia Española de Protección de Datos (AEPD)*, Case C-131/12, EU:C:2014:317.

Judgement of 1 October 2015, *Smaranda Bara v Preşedintele Casei Naşionale de Asigurări de Sănătate and ANAF (Transparency of Data Processing)* C-201/1, EU:C:2015:638.

Judgement of 21 December 2015, *Tele2 Sverige AB v Post- och telestyrelsen, and Secretary of State for the Home Department v Tom Watson and Others (Incompatibility of Indiscriminate Data Retention)* Joined Cases C-203/15 and C-698/15, EU:C:2016:970.

Judgement of 1 August 2022, *OT v Vyriausioji Tarnybinės Etikos Komisija (Violation of Data Minimisation Principle)* Case C-184/20, EU:C:2022:601.

Judgement of 20 October 2022, *Digi Távközlési és Szolgáltató Kft. v Nemzeti Adatvédelmi és Információszabadság Hatóság (Digi Purpose Limitation)* Case C-77/2, EU:C:2022:805.

Judgement of 2 March 2023, *Norra Stockholm Bygg AB vs Per Nycander AB and Entral AB, (Minimisation of personal data)* C-268/21, EU:C:2023:145.

Judgement of 4 May 2023, *FF v Österreichische Datenschutzbehörde and CRIF GmbH (Right to Obtain From Controller a Copy of Data Processed)*, C-487/21, EU:C:2023:369.

Judgement of 4 July 2023, *Meta Platforms and Others v Bundeskartellamt (Legal Bases For Data Processing)* C-252/21, EU:C:2023:537.

Official EU Websites

European Central Bank, '*Frequently Asked Question on a Digital Euro*', European Central Bank Website, https://www.ecb.europa.eu/euro/digital_euro/faqs/html/ecb.faq_digital_euro.en.html (February 14, 2024).

European Central Bank, '*What Would a Digital Euro Be?*', European Central Bank Website, https://www.ecb.europa.eu/euro/digital_euro/features/html/index.en.html (2024).

European Central Bank '*Oversight*', European Central Bank Website, Available at <https://www.ecb.europa.eu/paym/pol/html/index.en.html> (2024).

European Commission, '*Digital Euro Package*', European Commission Website, https://finance.ec.europa.eu/publications/digital-euro-package_en (28 June 2023).

European Commission, '*Digital Finance: Frequently Asked Questions on the Digital Euro*' European Commission Website, https://finance.ec.europa.eu/digital-finance/digital-euro/frequently-asked-questions-digital-euro-and-legal-tender-cash_en#:~:text=Like%20cash%2C%20the%20digital%20euro,in%20digital%20euro%20from%20consumers. (April 17, 2024).

European Commission, '*Technical Specifications: EU Digital Identity Wallet*', European Commission Website, <https://ec.europa.eu/digital-building-blocks/sites/display/EUDIGITALIDENTITYWALLET/Technical+Specifications> (April 12, 2024).

European Data Protection Board, '*Digital euro: ensuring the highest data protection and privacy standards*', European Data Protection Board Website, https://www.edpb.europa.eu/news/news/2023/digital-euro-ensuring-highest-data-protection-and-privacy-standards_en#:~:text=According%20to%20the%20proposed%20Regulation,known%20as%20the%20holding%20limit. (October 18, 2023).

European Parliament, '*Legislative Train Schedule: Digital Euro in an Economy that Works for People*', European Parliament Website,

<https://www.europarl.europa.eu/legislative-train/theme-an-economy-that-works-for-people/file-digital-euro> (2024).

6 Acknowledgments

As this thesis signifies my completed cycle in academia, I would like to express my deepest gratitude to my mother Emmy and my father Panos, who symbolise the stable home that supported me and cultivated my intractable character, the ship setting me on the course of my academic journey, a quest to knowledge, societal understanding, and my role in it.

I also want to thank my sister Maria, whose burning tenacity in pursuing goals academic or professional, acted as an indispensable paradigm and ethical compass in the difficulties of being away from home.

Finally, I am grateful for the guidance of all the professors who taught me with utmost dedication at Lund University, whose pedagogical skills match their excellent intellectual capabilities and create a prosperous and inclusive environment for all students to learn and grow.