

OWNERSHIP OF USER-HELD DATA: WHY PROPERTY LAW IS THE RIGHT APPROACH

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Summary

The main thesis of this article is that individuals should own their user-held data. Rapidly developing data processing technologies empowers individuals to collect their data from different sources and retain it in personal data clouds. Such user-held data represents the most accurate, up-to-date, and rich information about the individual. We show that user-held data meets all the requirements of an 'asset' in property laws regardless of the fact that data could be deemed as being intangible. More specifically, we show that such user-held data is specifically defined, has independent economic value to the individual, and can be freely alienated. We focus on property law aspects of data ownership and prove that user-held data should be treated as an 'asset'. We submit that the economic benefits property law type of entitlements over user-held data are superior over the set of data rights that are afforded by public law instruments (such as the GDPR or the CCPA) to individuals vis-a-vis third-party service providers who hold and benefit enormously from the information about individuals. Recognition of ownership rights is a necessary precondition for building a new data ecosystem where data is separate from applications; and where applications developed by third parties run on top of user held data. We show how user-held data is changing the understanding of the meaning of data portability and opens the opportunities for more fair, ethical, and transparent use of data and opens a level playing field for businesses to compete in providing bespoke services to individual consumers.

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I. INTRODUCTION

The thesis of this article is that individuals should own their user-held data. More specifically, we submit that data which individuals are now able to aggregate in their personal data clouds should be deemed an ‘asset’ or a ‘thing’ under property law. This notion of personal data ownership resonates well with consumers and consumer rights advocates, influencers, and thought leaders who rely on the moral argument that personal data emanates from and has a strong personal nexus to the individual.⁷

Our argument is based on existing market realities in the data ecosystem: just like technology companies who have been able to commodify aggregate customer data by removing personal identifiers that link such data to specific customers, individuals should be able to enjoy legal ownership of the data which individuals accumulate in their personal data clouds and derive long-term value from it. In this article, we aim to facilitate the discussion about a very specific segment of data, namely, data that is collected in a personal data cloud (which we refer to as ‘user-held data’).

Until recently, the prevailing approach in the European and American legal literature has been to deny the idea of exclusive data ownership.⁸ The widely accepted view has been that such a justification for conferring data ownership rights did not and cannot exist⁹, is not yet proven,¹⁰ is “unlikely to provide the level of control wished for”,¹¹ and that “the courts are yet to discover it.”¹² The leading legal experts suggested that there was no legal principle or theory that would *per se* justify the allocation of exclusive property rights over data.¹³ Therefore, any recognition of a new property right, such as an ownership right in (personal or non-personal) data, would require an additional and sound justification.¹⁴ One of the main reasons for such a position has been the fact that the notion of (personal) “data” was not specifically defined or was discussed in rather abstract terms.¹⁵ This is understandable because, until recently, the technologies enabling

⁷ See e.g., Will.i.am, *We Need to Own Our Data as a Human Right—and Be Compensated for It*, Economist (January 21, 2019) www.economist.com/open-future/2019/01/21/we-need-to-own-our-data-as-a-human-right-and-be-compensated-for-it [<https://perma.cc/J5TY-B5GZ>].

⁸ For an elaborate overview see e.g., Drexl n. 2 257; for a more recent overview see Patrik Hummel, Matthias Braun & Peter Dabrock, *Own Data? Ethical Reflections on Data Ownership*, 3 *Philos Technol* 545 (2020) <https://link.springer.com/article/10.1007%2F978-3-319-13347-020-00404-9> [<https://perma.cc/BUW4-7WFE>].

⁹ See Drexl *supra* note 2, at 266 (who also noted that rejecting the idea of personal data ownership to individuals does not imply an argument ‘against the recognition of an economic ownership right of a firm that collects data’); Malte Grützmacher, *Dateneigentum - ein Flickenteppich: Wem gehören die Daten bei Industrie 4.0, Internet der Dinge und Connected Cars?* 8 CR 485 (2016).

¹⁰ Anette Gärtner & Kate Brimsted, *Let’s Talk about Data Ownership* 39(8) E.I.P.R. 461 (2017).

¹¹ Sylvie Delacroix & Neil D. Lawrence, *Bottom-up Data Trusts: Disturbing the ‘One Size Fits All’ Approach to Data Governance*, 9(4) IDPL 236, 238 (2019) (who, despite calling ownership a ‘poor answer’ go on to propose the notion of data trust which can only work if the settlor has the owner of trust assets).

¹² See Gärtner & Brimsted, *supra* note 4, at 464.

¹³ Josef Drexl, Reto M. Hilty, Luc Desautettes, Franziska Greiner, Daria Kim, Heiko Richter, Gintare Surblyte, & Klaus Wiedemann, *Data Ownership and Access to Data*, <http://www.ip.mpg.de/en/link/positionpaper-data-2016-08-16.html> [<https://perma.cc/WTB7-SVDL>]; Lothar Determann, *No One Owns Data* 70(1) *Hastings L. J.* 1 (2018); Gärtner & Brimsted, *supra* note 4, at 464.

¹⁴ Cf. Josef Drexl, Reto M. Hilty, Jure Globocnik, Franziska Greiner, Daria Kim, Heiko Richter, Peter R Slowinski, Gintare Surblyte, Axel Walz, & Klaus Wiedemann, *Position Statement of the Max Planck Institute for Innovation and Competition of 26 April 2017 on the European Commission’s “Public consultation on Building the European Data Economy”*, 4, www.ip.mpg.de/fileadmin/ipmpg/content/stellungnahmen/MPL_Statement_Public_consultation_on_Building_the_EU_Data_Eco_28042017.pdf [<https://perma.cc/VE2T-RGQ8>]; for personal data in IoT see Vaclav Janecek, *Ownership of Personal Data in the Internet of Things*, 34 *Comput. Law Secur. Rev.* 1039, at 1044-1045 (2018).

¹⁵ See e.g., Jeffrey Ritter & Anna Mayer, *Regulating Data as Property: A New Construct for Moving Forward*, 16 *Duke L. & Tech. Rev.* (2018) 220; Ivan Stepanov, *Introducing a Property Right over Data in the EU: the Data Producer’s Right – an Evaluation*, 34(1) *Int. Rev. Law, Comput. Technol.* (2020) 65 (who discusses the pros and cons of granting data producers IP-like protection); Herbert Zech, *A Legal Framework*

user-held data solutions were not widely available. The dominant paradigm has instead been to focus on data access rights, rather than data as a property.¹⁶ Such views warrant reassessment, specifically taking into account recent technological and socio-economic developments.

In this article, we draw on our practical experience of working in the areas of private law and data privacy. We offer a pragmatic account of how companies approach personal data, and the current market shift towards a more user-centric data model. In Section 2.1., we begin by offering a short overview of the three major shifts that are taking place with regard to handling customer personal data. In Section 2.2., we explain how emerging technological tools help individuals gain control over their data and open new opportunities for empowerment with their personal data. We refer to this as the user-held data model (Section 2.2.).

To support our position about the need to grant property rights over user-held data, we introduce an example of an Instagram account which illustrates the four layers of data that companies are collecting about their customers (Section 2.3.). In Section 3, we give a brief historical account to show that since Classical Roman times, ‘property’ has been understood broadly and comprised intangible as well as tangible/corporeal assets. We provide a number of examples of intangible assets that have historically been regarded as objects of ownership in all jurisdictions. We then suggest that there are strong economic justifications for individual ownership of user-held data and argue that the denial of property rights over user-held data deprives individuals of their rightful claim to benefit from that data, and that this further strengthens the position of the four tech giants. By way of a conclusion, Section 4, introduces four positive implications of data ownership, namely the legal, technological, business and social superiority of user-held data.

II. UNPACKING THE NOTION OF PERSONAL DATA OWNERSHIP

Data and privacy are among the most frequently used buzzwords nowadays. In a world that is struggling to navigate the large-scale uncertainties and complexities of the COVID-19 pandemic, one of the most controversial areas of public debate revolves around the legal and ethical boundaries of the use of data: surveillance tools to identify and track potential carriers of the virus and the use of data for broadly defined ‘public interest’ purposes raise concerns among governments, policymakers, economists, consumer rights advocates, as well as members of the public. Since the outbreak of the pandemic, various legislative proposals have been submitted with the objective to establish a more transparent and accountable regulatory framework.¹⁷

for a Data Economy in the European Digital Single Market: Rights to use Data, 11(6) GRUR Int. 3 (2016) (who discusses about semantic and syntactic information and explores the possibility of data producer right); Jacob M. Victor, *The EU General Data Protection Regulation: Toward a Property Regime for Protecting Data Privacy* 123 Yale L. J. 513 (2013); European Commission, Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy, 19-24 <https://ec.europa.eu/digital-single-market/en/news/staff-working-document-free-flow-data-and-emerging-issues-european-data-economy> [<https://perma.cc/QGX4-8KGA>].

¹⁶ See e.g., Herbert Zech, *Besitz an Daten?* in Tereza Pertot (ed), *Rechte an Daten* (Mohr Siebeck, 2020) 92; Drexl, *et al.*, *supra* note 7, at 9; for an overview of the debate in the EU see Daria Kim, *No One’s Ownership as the Status Quo and a Possible Way Forward: A Note on the Public Consultation on Building a European Data Economy*, 13(2) J. Intell. Prop. L. & Pract. 154 (201).

¹⁷ See e.g., Alan Schwartz, *Two Federal COVID-19 Privacy Bills: A Good Start and a Misstep*, EFF (May 28, 2020), <https://www.eff.org/deeplinks/2020/05/two-federal-covid-19-privacy-bills-good-start-and-misstep> [<https://perma.cc/SN3G-TNXU>].

Beyond the realm of the current pandemic, online platforms and data intermediaries are at the forefront of debates about issues related to personal data.¹⁸ The most recent congressional hearing on antitrust which took place on July 27, 2020, offers insight into the daily data practices of the four data titans (Google, Amazon, Facebook, and Apple, hereinafter, ‘GAFA’).¹⁹

In his opening speech, the chairman of the Judiciary Committee, D. Cicilline, explained that GAFA’s dominance reveals itself in three common patterns: (a) each GAFA company is acting as a bottleneck for a key channel of distribution and are exploiting this power by extracting value from people and business that rely on them, (b) each GAFA company uses its control over the digital infrastructure to monitor other companies and leverage this capacity to protect its market power either by acquiring or cutting access to a potential rivals, and (c) abuse their control of the technology to extend their influence by self-dealing, predatory pricing, and buying additional products.²⁰ According to Chairman D. Cicilline, in addition to discouraging entrepreneurship and destroying jobs, staving-off competition, creativity, and innovation, the four tech giants are harvesting and abusing people’s data: “every day Americans are learning how much of their data is mined, and they cannot run away fast enough. In many cases, there is no escape from this surveillance because there is no alternative. People are stuck without options.”²¹

These observations about the abuse of a monopolistic position by the four technology giants are largely possible because of their ability to exploit troves of data about customer behavior and preferences that they have amassed over recent years. For the purposes of this article, the discussion about who owns what data would not be possible without a better understanding of the underlying changes that have been taking place in the last few years. In the following section, we outline three major domains - regulatory, technological, and commercial - and illustrate the factors driving these changes that have a direct impact on the debate on personal data ownership.

II.1. Major Shifts in the Market

The first major shift in the market relates to the adoption of new data privacy laws such as the GDPR in Europe or the CCPA in California.²² The legislative intervention by means of public law measures manifests an increased interest in, and concern with, data privacy by regulators, policymakers, and society in general. The GDPR and the CCPA are the most impactful, high-profile legislative initiatives that aim to improve how companies manage their customers’ data. In addition, both the GDPR and CCPA set forth a number of personal data rights for the individuals (e.g., the right to know what data companies are collecting about their customers, the

¹⁸ Nicholas Economides & Ioannis Lianos, Restrictions on Privacy and Exploitation in the Digital Economy: A Market Failure Perspective, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3686785 [https://perma.cc/RS5S-U9MX].

¹⁹ House Judiciary Committee, Online Platforms and Market Power: Examining the Dominance of Amazon, Apple, Facebook, and Google, <https://www.youtube.com/watch?v=WBFDQvIrWYM> [https://perma.cc/YKF5-LX52].

²⁰ Opening statement by D. Cicilline, *ibid*.

²¹ *Ibid*.

²² For the final text and accompanying documentation *see* <https://oag.ca.gov/privacy/ccpa> [https://perma.cc/TMC2-VTZH].

right to be forgotten, the right to delete, the right to opt-out of sales of personal data, as well as the right to data portability). Finally, these two data privacy laws have had significant ripple effects around the world and led to the adoption of similar laws in other jurisdictions

The second significant shift relates to the way businesses approach the collection and use of their customers' personal data. New legal requirements brought about by the GDPR and the CCPA have significantly increased legal risk and the data controllers' costs for regulatory compliance.²³ For instance, according to statistics available in September 2020, the average cost for the processing of a single customer's data request was approximately 1500 US dollars.²⁴ Besides, many businesses are looking for alternative ways to obtain information about their customers because data giants are far less willing, or even able, to identify and disclose the data they currently have in their possession.²⁵

Third, technological advancement has accelerated at an immense pace in the past few years. The amount of data generated has been increasing incrementally (from 33 zettabytes of data produced in 2018 to an expected 175 zettabytes in 2025²⁶). Large technology firms are subject to more rigorous antitrust scrutiny forcing them to open up or change their business models and adjust certain technologies to the fast-changing technological and socio-economic environment.

One of the most remarkable illustrations of this change is the January 14, 2020 decision of Google to completely abolish third-party cookies on its Chrome browser by 2022²⁷ thus eliminating opportunities for marketers to track individuals as they browse from one website to another.²⁸ Other service providers such as Apple and Mozilla have stopped using third party cookies several years ago mainly because of an emerging willingness to protect their customers' privacy.²⁹

Moreover, data processing technologies have reached a level of maturity where decentralized data management models have now become more feasible. In particular, the emergence of federated learning, differential privacy, edge computing, complex machine learning, and decentralized ledger technologies make it possible to conduct major data processing locally (i.e., on end-user devices). On the other hand, centralized data models struggle to provide adequate performance and safeguards to the most advanced applications. This shift

²³ See Office of the Attorney General, Standardized Regulatory Impact Assessment: California Consumer Privacy Act of 2018 Regulations, http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/CCPA_Regulations-SRIA-DOF.pdf [<https://perma.cc/4XGG-5WWK>].

²⁴ See Wirewheel, The Ultimate Guide to Data Subject Access Request (DSAR) Management, <https://wirewheel.io/wp-content/uploads/2019/10/WireWheel-eBook-Ultimate-Guide-to-Data-Subject-Access-Request-Management.pdf> [<https://perma.cc/M8FG-LAQS>], 3 (noting that processing one data subject access request could be as expensive as 2,500 US dollars).

²⁵ Jasmin Malik Chua, *Direct-to-Consumer's Lasting Impact on Fashion*, Vogue Business (February 2, 2020), www.voguebusiness.com/consumers/direct-to-consumer-lasting-impact-on-fashion-levis-nike-samsonite [<https://perma.cc/T5TT-2R8U>].

²⁶ European Commission, A European Strategy for Data 2020' COM(2020) 66 final (19.2.2020), https://ec.europa.eu/info/sites/info/files/communication-european-strategy-data-19feb2020_en.pdf [<https://perma.cc/GC4W-ACEK>].

²⁷ Justin Schuh, Building a More Private Web: A Path Towards Making Third Party Cookies Obsolete, Chromium Blog (January 24, 2020) <https://blog.chromium.org/2020/01/building-more-private-web-path-towards.html> [<https://perma.cc/QD3Z-JYX3>].

²⁸ Paulius Jurcys, Markus Lampinen & Kimmo Kiviluoto, 'Reimagining The World Without Cookies', <https://medium.com/prifina/reimagining-the-world-without-cookies-3f01d614be29> [<https://perma.cc/29ZR-FKCF>].

²⁹ Gerrit De Vynck, Firefox Follows Apple in Blocking Third-Party Cookies Online, Bloomberg (June 4, 2019) <https://www.bloomberg.com/news/articles/2019-06-04/firefox-follows-apple-in-blocking-third-party-cookies-online> [<https://perma.cc/8JKR-XUNP>].

towards decentralized, user-centric, user-held, data ecosystem is likely to curtail the risk of major data leaks because hackers will find fewer incentives to hack data sets stored on independent personal data clouds of each individual user. This is simply an outcome of each individual silo having less value because they include fewer data. Yet, despite the small value of penetrating one individual cloud, this will effectively require the same effort as penetrating a larger database or centralized service with far greater value.

As a result of such changes in regulatory, business, and technology domains, coupled with the increased consumer awareness about the uses of personal data in the post-COVID-19 context, the more user-centric, user-held data model advanced here is entering the mainstream in the on-going debates around data privacy. Indeed, the GDPR and other data privacy regulations have opened the door for individual consumers not only to access their personal data collected by data processors but also provided them with the incentive and practical tools to control how their data is used and the means to ensure that individuals are able to secure long term value for that data.

II.2. The User-Held Data Model: Key Principles

Individual consumers are the biggest beneficiaries of newly emerging technologies that enable local processing of information at edge devices (especially, cell phones or tablets). Together with privacy-preserving encryption algorithms, these new technologies open opportunities to empower individuals with private data. The most important feature of a user-centric, user-held data model is that individual consumers retain their own master copies of personal data. Such master copies are held in a *'personal data cloud'*: think of it as your Dropbox folder or a digital wallet where master copies of data are stored. Every personal data cloud is supported by software that helps the user to keep the data organized and understandable to an average human being. Furthermore, the personal data cloud can only be accessed by the individual consumer herself; third parties can access certain fragments of data only with the individual's prior authorization).

All the data held in a personal data cloud comes from one of two sources. First, some data can be manually added by the individual (e.g., by uploading copies of personal ID, financial statements, or monthly bills). Secondly, personal data can be aggregated to the personal data cloud from third-party data aggregators or data processors. This process is fully automated and is conducted by software that is embedded in the personal data cloud. In the EU, such retrieval of personal data from third-party service providers is legally possible pursuant to Article 15(3) of the GDPR (the "right to obtain a copy of data") and Article 20 of the GDPR (the "right to data portability").³⁰

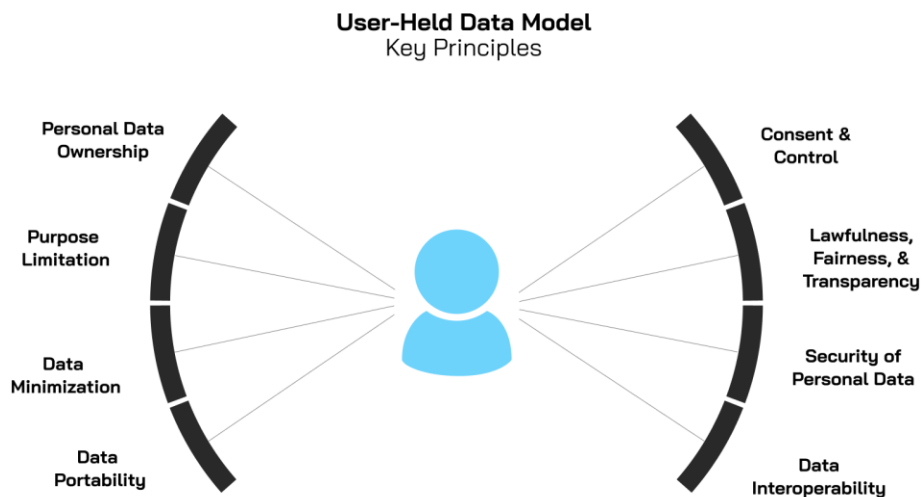
The user-held data model has two important implications. First, being able to retain one's data in a personal data cloud, an individual user can better understand the depth and breadth, as well as the value, of her personal data. A software robot that supports the personal data cloud

³⁰ In California, such a retrieval of personal data is possible pursuant to Art. 1798.110 of the CCPA (right to know) and S. 999.312 of the CCPA Regulations.

helps “normalize” the aggregated data and makes it easier to understand for an average consumer. Second, the user-held data model leads to the separation of data from the applications: in a user-held data ecosystem applications run ‘on top’ of any data that is held in a personal data cloud. This is the paradigm of the data portability right enshrined in Article 20 of the GDPR: once data is retrieved from a data processor and stored in a personal data cloud, the data no longer has to “travel” to another service provider; instead, the service provider comes to the individual and runs on top of the user-held data.

From a legal viewpoint, a user-centric data model is embedded in the fundamental principles of the GDPR and CCPA. In a user-centric data model, the individual has the ultimate authority to control how that data is used and with whom that data is shared. Third-party service providers can access an individual’s data only with an individual’s prior express consent and under the terms determined by the individual. The individual is able to exercise such control by granting permissions to access data on a granular level: data access permissions can have many different layers (e.g., access for a specific period time, for a specific purpose/function, and for a specific third-party).³¹ Since third-party applications are installed on top of user-held data, by default, these apps can access only that particular segment of an individual's personal data which is necessary to perform that particular function of the application.

From a service provider’s perspective, offering services that process the data within the user’s personal data cloud not only secures that the data is used lawfully, but it also means that the individual can get bespoke services under the terms which are set by the individual herself (Art. 5(1)(a) GDPR). Accessing data directly from the individual aligns perfectly with the GDPR’s principles of data minimization (Art. 5(1)(c) GDPR) because the service provider does not have to hold any data on its servers. The principle of purpose limitation is also upheld because the data is used only for the specific purpose to which the individual granted prior permission (Art. 5(1)(b) GDPR).



³¹ Paul Jurcys, Chris Donewald, Jure Globocnik & Markus Lampinen, My Data, My Terms: A Proposal for Personal Data Use Licenses, 33 Harv. J.L. & Tech. Digest 9-12 (2020).

II.3. Four Layers of Data

Previous attempts to address the issue of personal data ownership stumbled on multiple practical challenges. First, legal scholars struggled to define the contours and boundaries of personal data that can be protected or owned.³² For instance, there are elements of personal data that are publicly available basically for anyone (think of public user profiles on social media sites). Personal data sets can be held by various parties such as public authorities (e.g., public utilities, tax agencies), private companies (e.g., banks, or service providers), as well as data brokers that collect personal data and sell it to anyone who is willing to pay for it.³³ Second, much has been written on the need to delineate the layers of personal data and identify at what point it loses the qualities of ‘personal’.³⁴

For a data scientist, personal data has many different layers. To illustrate, consider customer data which is gathered by third-party service providers. There are four layers of personal data that online service providers are collecting about their customers: (a) input data, which is manually provided by the user, (b) metadata; (c) observable and observed data, and (d) derived data. This can better be illustrated by the Instagram example. If a user uploads a photo to her personal Instagram account, there are four layers of data that Instagram is able to generate:

1. *Input data*: all the data that the individual is manually adding to an Instagram post (the photo itself, the photo caption, comments, hashtags, etc.). While the user is the owner and copyright-holder of the photo, according to Instagram’s Terms of Use, Instagram obtains a non-exclusive and royalty-free permission to use that photo and process all data contained in that photo.³⁵
2. *The metadata in the photo*: for example, GPS data that is attached to the photo, the details about the camera, its resolution, and other information that travels with the photo. Similar to the photo itself, the metadata in the photo belongs to the user, however, Instagram has the right to use it.
3. *Observed and observable data*: how that photo and accompanying content is used on the Instagram platform (e.g., how many likes and comments it received). This observed and observable data is neither created by Instagram nor by the individual user. However, it is clear that such data are available only to Instagram, and that the individual has no access to it (unless the user is the owner of the Instagram business account³⁶).
4. *Derived data*: based on all of the three categories of data outlined above, Instagram is inferring various information about the user (e.g., preferences, behavior patterns, other

³² Cf. Drexler, *supra* note 2, at 263 (para. 21).

³³ From the user’s point of view, there could be different categories of ‘personal’ data, such as: (a) data which should be fully owned and controlled by the individual (e.g., extremely sensitive data, or data that the user has created and has yet to share anywhere); (b) data the copies of which the individual should have and also should be able to have the right and control; (c) data the copies of which the individual should have without any control of how third parties are using it (e.g., statistical data about the individual) (d) I should have right to know about my data, but not have any control for (changing) it (possible example: criminal history), (e) I should not even know that such data about me is collected (possible example: legal criminal investigation).

³⁴ See e.g., Determann, *supra* note 7, at 5.

³⁵ Instagram, Terms of Use (as revised on April 19, 2018), <https://help.instagram.com/478745558852511> [<https://perma.cc/6WYT-P8VC>]; and Instagram’s Data Policy (as revised on August 21, 2020) https://help.instagram.com/519522125107875?helpref=page_content [<https://perma.cc/J6EL-YVCT>].

³⁶ *Ibid.*

insights about the individual, etc.). Again, this is valuable information which Instagram is using in its ad-driven business model, and to which individual users have no access.

Pursuant to the GDPR and the CCPA, in responding to requests for further information about their data and its use, businesses such as Instagram are required to provide extremely detailed information. More specifically, Section 1780.110(a) of the CCPA, requires businesses to provide (i) categories of personal information, (ii) the categories of sources from which the personal information is collected, (iii) the business or commercial purpose for collecting or selling personal information, (iv) the categories of third parties with whom the business shares personal information, and (v) the specific pieces of personal information it has collected about that consumer. The authors of this article conducted an empirical study and sent requests to know pursuant to the CCPA to more than fifty businesses (data controllers) and in most cases received responses that mostly contained a compiled set of input data as described in the Instagram example below.³⁷ While a detailed analysis of how individual businesses are complying with the new demands of data privacy regulations is beyond the scope of this article, it is clear that compliance with minimum data requests is far from what the laws require.

III. OWNERSHIP OF USER-HELD DATA: LEGAL, ECONOMIC, AND MORAL JUSTIFICATIONS

In the previous section, we examined the emerging technologies that provide the foundations for a user-held data model. We also highlighted how, as a result of emerging technologies, there is a concrete category of ‘user-held’ data which is stored in a personal data cloud and it is clear where this data is coming from and how this data can be used. We believe that it is crucially important to clarify whether, in a strictly legal sense, such user-held data can be considered as an ‘asset’ in property law and whether it can be legally owned.³⁸ In this section, we focus on the legal side of arguments. Our main argument is that the totality of data that is organized in a specific manner and which is held in a personal data cloud already meets the necessary requirements of ownership in many jurisdictions. This is because such user-held data, as an object of ownership, has (a) clearly delineable boundaries, (b) provides economic value to the individual, and (c) and can freely be disposed of. By narrowing down the discussion in this way, and solely on user-held data, we seek to move away from an overly-abstract discussion of the issue and concentrate on the real-world scenarios and applications.

In Section 3, we begin by a historical narrative going back to the classical period in Roman law which laid the foundations for virtually all legal systems around the world. Such a

³⁷ Markus Lampinen, Hundreds of Companies Are Having a Party with My Cookie Data and I Wasn’t Invited, *Towards Data Science*, 29 July 2020) <https://towardsdatascience.com/hundreds-of-companies-are-having-a-party-with-my-cookie-data-and-i-wasnt-invited-e7f70837b27> [<https://perma.cc/S4BD-D6R6>].

³⁸ Cf. Hideki Kanda, Rethinking Property Rights in the Digital Age, in Christoph Benicke and Stefan Huber (eds) *FS for H. Kronke: National, International, Transnational: Harmonischer Dreiklang im Recht* (Gieseking 2020), p. 1763 (who notes that defining a specific category of resources is one of the primary requirements for the recognition of property rights).

comparative perspective reveals that the separation of assets into corporeal and incorporeal has been preserved in all jurisdictions, regardless of various differences that exist in national property laws. We also identify a number of intangible assets that are considered as objects of ownership, specifically floating charge and cryptocurrencies, which are also the closest analogies to user-held data. We suggest that the mere characteristic of an asset that it is intangible does not provide any justification for excluding it from the scope of ownership.

III.1. The Notion of a ‘Thing’: An Historical Perspective

The discussion on what objects can be considered as ‘things’ in property law inevitably leads to legal concepts that were first developed in Roman law and subsequently appropriated and adopted in other legal systems. In classical Roman law (defined here as the first 250 years AD), the notion of a ‘thing’ (*res*) was referred to as an independent material object which can be owned by an individual, used in daily activities, and which has a material value to an identifiable individual.³⁹ Gaius, one of the most prominent Roman lawyers, distinguished “things” into two categories: corporeal/tangible (*res corporales*) and intangible (*res incorporales*).⁴⁰ For Romans, corporeal things were objects that had a physical shape and could be defined by measuring (e.g., land, goods, or chattels). The notion of *res incorporales* extended to any incorporeal objects such as rights and liabilities under an obligation, rights in things owned by others, rights of inheritance, as well as other intangible goods such as a person’s social status.⁴¹ Both tangible and intangible things were considered as ‘objects’ that could be subject to private ownership by an individual and were governed by the private law norms of classical property law.⁴²

This clear conceptual separation of things into two categories had a profound effect on the early history and development of legal systems in Europe as well as on the common law. In the twelfth century, when Roman law was rediscovered in Bologna, the concepts, legal rules, and maxims embodied in the Justinian’s Code proved superior to the contemporary customary laws.⁴³ As a result, over the next few centuries, Roman law gradually penetrated local customary laws in Europe and formed the foundation for the evolution of a continental *ius commune*. Even now, Roman law continues to inform modern national legal systems and legal thinking in Europe and beyond.⁴⁴

The distinction between corporeal and incorporeal things accepted in the major European codifications of the 18th and 19th centuries. This was so because lawyers felt the need to maintain and incorporate such principles of property law that were understood as the legal

³⁹ Herbert Hausmaninger & Walter Selb, *Römisches Privatrecht* 169 (1981).

⁴⁰ Inst. Gai. 2.12-14; Bernhard Windscheid & Theodor Kipp, *Lehrbuch des Pandektenrechts* 372-375 (2d ed. vol. 1, 1867); Max Kaser, *Das Römische Privatrecht* 381 (vol. 1, 1971); Rudolph Sohm, *The Institutes of Roman Law* 225 (1892).

⁴¹ James Hadley, *Introduction to Roman Law in Twelve Academic Lectures* 160-161 (1894); Sohm, *supra* note 24, at 225; William L. Burdick, *The Principles of Roman Law and Their Relation to Modern Law* 299 (2004).

⁴² Sohm, *supra* note 35, 225; Paul Du Plessis, *Property*, in *The Cambridge Companion to Roman Law* (D. Johnson, ed., CUP, 2015), p. 176; Ipolitas Nekrošius, Stasys Vėlyvis, & Vytautas Nekrošius, *Romėnų teisė* 98 (2d ed, 1999).

⁴³ Reinhard Zimmerman, ‘*Ius Commune* and the Principles of European Contract Law: Contemporary Renewal of an Old Idea’ in Hector MacQueen and Reinhard Zimmermann, *European Contract Law* (Edinburgh UP, 2006) 9.

⁴⁴ *Ibid.*, at 9-10.

achievements of centuries.⁴⁵ Hence, such an expansive notion of things exists in the laws of Portugal,⁴⁶ Italy,⁴⁷ Austria,⁴⁸ France, Belgium, Spain, Sweden,⁴⁹ Scotland,⁵⁰ England and Wales,⁵¹ as well as the Netherlands,⁵² and, more recently, Lithuania.⁵³ All of these countries acknowledge that individuals can own material things but also other - incorporeal - assets.

Of course, property law remains highly fragmented and some jurisdictions have different, more rigid, approaches. For example, the German Civil Code (BGB) is one of the few countries where a narrow definition of things is adopted. More specifically, Article 90 of the BGB provides that things are only corporeal objects. Such a narrow conception of things per se (*Dinge an sich*) could be explained taking into consideration the practical realities of the nineteenth century: things that had a material form were deemed by the architects of the code as clearly falling within the scope of property law; and everything else (claims, rights, and obligations) were placed into a separate law of obligations. As such, the BGB was intended to provide a framework for an ‘organically progressive legal science.’⁵⁴ In order to clearly delineate what constitutes a thing in a property law context, German lawyers coined five principles of property law.⁵⁵ For the purposes of our discussion, the most noteworthy is the principle of specificity (*Bestimmtheitsgrundsatz*) which means that a proprietary right exists only in relation to a *specific* thing and not a totality of separate things (e.g., in the case of the books in a library, the owner owns each book individually - not the totality of books). Such a narrow definition of a thing resulted in a highly conceptual separation of contractual obligations from proprietary claims which continues to lie at the heart of German private law.

The confluence of the proprietary and contractual aspects that penetrate the notion of assets/ownership could be best seen in the debates related to the nature and effects of the assignment of claims.⁵⁶ One possible approach espoused by humanists was to argue that the claims arising from an individual creditor-debtor relationship cannot be transferred because they ‘can no more be separated from his person than the soul from the body.’⁵⁷ This was the case in the pre-classical Roman law where Roman lawyers developed such concepts as novation and procedural representation in order to make transfers of claims from one creditor to another possible. Such a restrictive approach has been adopted in some countries; in such a rigid

⁴⁵ Bernhard Windscheid, Die geschichtliche Schule in der Rechtswissenschaft, in Bernhard Windscheid, *Gesammelte Reden und Abhandlungen* (1904) 75.

⁴⁶ Art. 202(1) of the Portuguese Civil Code states that ‘[e]verything is called a thing (coisa) that may be the object of legal relationships’; this notion is interpreted to include both corporeal and incorporeal things.

⁴⁷ Art. 810 of the Italian Civil Code stipulates that ‘[t]hings (beni) are those assets (cose) that can be the objects of rights’.

⁴⁸ Sections 285, 292, 298, and 299 of the Austrian Civil Code.

⁴⁹ For an overview of corporeal/incorporeal distinction in the civil codes of France, Belgium, Spain, and Sweden, see Christian von Bar and Ulrich Drobnig (eds), *The Interaction of Contract Law and Tort and Property Law in Europe: A Comparative Study* (2004) 318-319.

⁵⁰ *Ibid.*, 319.

⁵¹ *Ibid.*

⁵² Arts. 3.1, 3.2, and 3.6 of the Dutch Civil Code.

⁵³ Art. 1.91 of the Civil Code.

⁵⁴ Frydriich Carl von Savigny, ‘Vom Beruf unserer Zeit für Gesetzgebung und Rechtswissenschaft’ in Jacques Stern and Hans Hattenhauer (eds), *Thibaut und Savigny: Ihre programmatischen Schriften* (2nd edn, Vahlen 2002) 126.

⁵⁵ Principles of publicity (*Publizitäts-/Offenkundigkeitsgrundsatz*), absoluteness (*Absolutheit*), definiteness (*Spezialitätsgrundsatz* or *Sachenrechtlicher Bestimmtheitsgrundsatz*), and numerus clausus (*Typenzwang*).

⁵⁶ See e.g., Eva-Maria Kieninger, European Rules on the Law Applicable to Third-Party Effects of Assignments: A Never-Ending Story? 24 *Unif. L. Rev.* 633 (2019); Lutz Christian-Wolff, The Relationship between Contract Law and Property Law, 49(1) *Common L World Rev* 31 (2020).

⁵⁷ Reinhard Zimmerman, Law of Obligations: Roman Foundations of the Civilian Tradition 58-59 (1996).

structure of assignments, the assignment of a claim was considered to have legal effects vis-a-vis the debtor only if the debtor was notified (through bailiff) about the assignment or ‘accept’ the assignment by judicial or a notarial act.⁵⁸ Clearly, such a casuistic framework was not suitable for rapidly developing economies and the need to make the circulation of credit more fluid. Hence, most, if not all, modern legal systems have adopted a functional approach whereby rights to claims constitute an asset within the estate of the creditor and are deemed as fully transferable claims of the creditor.⁵⁹

If we fast forward to the twenty-first century, there are a number of intangible categories of objects that are considered as property or an asset that can be owned by an individual, irrespective of how the legal system defines ‘things’: intellectual property rights (e.g., copyrights, patents, trade secrets, etc.), electricity, money held in a bank account, dematerialised securities,⁶⁰ receivables, collateral consisting of both tangible and/or intangible property subject to security interests such as a floating charge (a special kind of universal business security right over changing assets of a company),⁶¹ and bitcoin and any other cryptocurrencies that individuals hold in their digital wallets.⁶² None of these types of assets have a definite corporeal manifestation, but despite the intangibility, it is undisputed that they are subjects of property law.

Therefore, there are no historical or *de lege lata* arguments to suggest that immateriality of personal data should make it impossible for such data to be excluded as one of the legitimate objects of property law. In the next section, we consider a number of compelling arguments that justify the extension of ownership to a certain class of data.

III.2. User-Held Data as an Object of Ownership

The key proposition of this article is that individuals should own data which is stored in a personal data cloud. We do not suggest that individuals should own *all* data that could be considered as ‘personal’ - such a claim would be impractical and, possibly, absurd. Rather, we encourage exploring the situation where the object of personal ownership is only that data which is clearly defined: namely, copies of personal data that an individual holds in her personal data cloud.

As explained in Section 2.2., individuals can aggregate their personal data collected by third-party service providers by submitting requests to know. At the time of writing this paper, most of the service providers send copies of their customer data in JSON format which is considered as the most lightweight data sharing format.⁶³ While JSON is a common language for data scientists, one may wonder whether such a format could be actually considered to meet the requirements of GDPR and CCPA to ascertain the possibility for average consumers to read and

⁵⁸ *Id.*

⁵⁹ See Art. 9 of the UCC and Art. 398 of the German BGB.

⁶⁰ See 2009 UNIDROIT Convention on Substantive Rules for Intermediated Securities; Kanda, *supra* note 32, at 1763.

⁶¹ Robert R. Pennington, *The Genesis Of The Floating Charge*, 26(6) *Mod. L. Rev.* 630 (1960).

⁶² See IRS Notice 2014-21, 2014-16 IRB 938 (which explains that virtual currency is treated as property for Federal income tax purposes) <https://www.irs.gov/pub/irs-drop/n-14-21.pdf>.

⁶³ See <https://www.json.org/json-en.html>.

understand that data.⁶⁴ In the user-centric data model, once the data enters an individual's personal data cloud, that data is instantly 'normalized' by eliminating redundant parts and systematically arranged. As a result, the individual user can easily understand the content of her personal data and determine how to use it.

From a property law perspective, compared to the other data fragments about the individual which are collected and retained by various businesses, the newly organized data that resides in the individual's personal data cloud is a new and unique thing. The processing of different segments of data in a personal data cloud happens in real time; and the content of that data is constantly changing: the personal data that an individual has today is going to be different from the data that the individual has tomorrow.⁶⁵ Metaphorically speaking, this could be compared to the forging of a precious ring by molding raw gold and embellishing it with rare gems. If this new set of data (or ring) cannot be returned to its previous state, it is considered as a 'new thing' that belongs to the person who created it.⁶⁶ The same is true for user-held data: once data enters a personal data cloud, it is blended into a new complex data set and becomes a unique asset in the hands of the individual.

One of the major issues that existed in the earlier discussions about personal data has been the multiple layers of sensitivity and places where the data may exist.⁶⁷ This was probably one of the important reasons why scholars and practitioners found it difficult to recognize ownership of something that had no clearly delineable boundaries.⁶⁸ In the user-centric data model, such a problem is partially resolved because it is possible to clearly delineate the contours of the data that is held in a personal data cloud. When the data is uploaded or imported via software functionality to the user's personal cloud, that upload/import event is logged both with a timestamp and event description. Furthermore, since that data is organized in a unique way, this combination of data as well as its separate data sets are different from the data that is 'out there' (either at the possession of a service provider, or in the database of a certain government agency).

There are multiple layers of data and one of way of thinking about this layered character of data is in terms of the different degree of sensitivity attaching to that data: e.g., data collected by national tax authorities, personal data collected by immigration authorities, medical data collected by private health providers, location and mobility data collected by ride-sharing service provider; public data concerning the lists of registered sexual offenders, social network sites which host data manually provided by the users of the platform, and so on. Depending on the nature of the data, its content, as well as actors involved in possessing and controlling its use, such data could be subject to one of the three property regimes: public, private, or common property.

⁶⁴ Art. 12(1) of the GDPR and S. 1798.185(a)(6) of the CCPA.

⁶⁵ Drex1, *supra* note 2, para. 26.

⁶⁶ In Roman Law, this was known as *specificatio* (whereby the creator of a new thing takes property in it if the materials are incapable of separation as a result of the (*nova species*) creation).

⁶⁷ See Determann, *supra* note 7.

⁶⁸ See *supra* note 9.

Rapidly changing social, economic, and technological evolution in the past two centuries illustrate how property law has evolved to include new classes of assets under the umbrella of ownership. One might also speculate whether Romans in the classical period or Germans in the nineteenth century had such technological development as we do in 2020, they would have concluded that user-held data is an asset too. The historical discussion above revealed how the property law system historically encompassed both corporeal as well as incorporeal/intangible ‘objects’. User-held personal data, as long as it is clearly defined (e.g., stored in certain digital data vaults) should, therefore, be seen as a new category of asset which individuals should own. Next, we consider two groups of justification to support such a claim, namely economic justifications and moral justifications.

III.3. Economic Justifications

III.3.1. Stabilizing Access and Allocation and Use of Scarce Resources

The main objective of economics is to determine the most efficient allocation of limited resources. This notion of scarcity plays a key role in complex social interactions between private individuals. The scarcity mindset also impacts the decisions that individuals have to make every day. Private law areas such as property law, contract law, and tort law, emerged as tools to eliminate chaos in the society and facilitate efficiency. One of the core functions of property law is to define things and assets that can be possessed and owned.⁶⁹ The institutions of possession and ownership are highly formalized ways of communicating to the society about the general duty to keep off the thing. Property law is based on the rule of exclusion: to say that this asset belongs to somebody is generally understood that nobody is allowed to damage or trespass it. Furthermore, such exclusionary strategies are supplemented by various property governance norms and rules of proper use.⁷⁰

Any society with an interest in avoiding conflicts needs a system of clear property rules.⁷¹ By clearly defining that no one is allowed to trespass or damage one’s property, property law not only offers stability and legal certainty but also allows owners to plan and invest in their personal property. The recognition of ownership rights over user-held data means that individuals are able to engage in strategic behavior with regard to their personal data. Differently from early Internet days where users had to face ‘take it or leave it’ terms of use,⁷² in the user-held data environment, personal data becomes a long-term asset that brings every-day bespoke value to the individual.

The recognition of ownership rights over user-held data is of paramount importance for the new data ecosystem. This is so because the ownership and title rules allow for more elaborate

⁶⁹ Smith, *supra* note 63, at 156-157.

⁷⁰ *Ibid*, 158-159.

⁷¹ Jeremy Waldron, Property and Ownership, Stanford Encyclopedia of Philosophy (March 21, 2020) <https://plato.stanford.edu/entries/property/>.

⁷² Daniel J. Solove, Privacy Self-Management and the Consent Dilemma, 126 Harv. L. Rev. 1880 (2013).

forms of use of personal data.⁷³ For instance, once individuals have clear ownership over their data which they hold in their personal data cloud, the access to such data can be divided into different categories based on time of access and the extent to which that data could be used by a third party.⁷⁴ User-held data ownership rights empower individuals to set the terms of how brands and service providers interact with them on a daily basis. Most of the brands are looking for new ways to directly interact with their customers, and a user-held data model opens the gate for this new framework of interactions.

In this way, property law systems and personal data ownership rights help achieve goals that public law instruments such as the GDPR or CCPA could not achieve. A closer look into the reasons for the adoption of most of the recent privacy statutes reveals the legislators' intent to correct information asymmetries and market imperfections that related to the use of personal data. Property law, together with other areas of private law, help take this to the next level by affording new ways to benefit from user-held personal data and also have the ability to use means of legal redress provided by private law. Once the definition of what counts as an asset in terms of property law is stable, individuals can engage in strategic behavior related to the utilization of user-held data.

III.3.2. Monopolies

The second question that the economist may consider in assessing the possibility of conferring new ownership rights relates to monopoly. Would the holder of the asset be likely to gain a market monopoly and thus potentially cause adverse effects to other stakeholders? How would such ownership rights affect competition in the market? What will be the effect on the quality of goods and services at hand? Will prices increase? Finally, would artificial barriers to market entry be created?

In the current data ecosystem, the dominance of the four tech titans – most obviously, Google, Amazon, Facebook, and Apple – raises a series of antitrust and market dominance concerns that have been subject to investigations in different countries.⁷⁵ Their position in various vertical, as well as platform-related, business practices led to the intervention by the regulators in different jurisdictions. As part of this effort to give individuals some control over how their personal data is used, data privacy laws often confer individuals certain rights to data: e.g., right to know, right to access, right to delete, right to opt-out of the sale of data, and also right to data portability.

From an economic point of view, private law institutions — such as ownership — have two main objectives: (a) delineate the relationship between individuals the property they have; and (b) to prevent others from interfering into that personal property. Keep off unless you have

⁷³ Smith, *supra* note 63, at 158.

⁷⁴ Jurcys *et al*, *supra* note 25, at 7.

⁷⁵ See e.g., Stephanie Bodoni & Aoife White, Facebook Wins Temporary Halt to EU Antitrust Data Demands, Bloomberg (July 28, 2020) <https://www.bloomberg.com/news/articles/2020-07-28/facebook-wins-temporary-halt-to-eu-antitrust-data-demands-kd5pdw1x>.

permission!⁷⁶ Besides, as the owner of the asset, the individual has free disposition over the thing. There are four ‘classical’ rights that all democratic systems grant to the owner of an asset: the right to possess, right use, right to dispose of, and the right to get fruits from the asset (these rights stem also from classical Roman law period). Hence, as the owners of their personally held data, individuals are able to make independent choices how they want to utilize that property: for instance, they can determine the conditions under which third parties can access that data, and revoke their permission whenever they choose to do so.

As such, granting personal ownership rights over user-held data has significant pro-competitive implications. By being able to hold the most up-to-date information about themselves, individuals become the ultimate source of truth and thus curtail the dominance of the four data giants. Furthermore, a user-held data model opens new opportunities to third party developers who can build new types of applications that run on top of user-held data without being dependent on the whims of the four data giants. The new data model levels the playing field among brands and service providers who would then look for new innovative ways to connect with their customers.

III.3.3. Effects on Innovation

From an economic point of view, it is important to investigate what effects the conferral of new property rights would have on innovation. To do so, we need to examine how value is generated. Traditional economic models are based on vertical value chains where value is added at each step of distribution.⁷⁷ However, in the user-held data economy, most decisions are based on data and AI-powered tools that run on top of user-held data and help automate the process and reduce the transaction costs at every step of the interaction. Interactions in the user-held data economy are based on the ability to provide bespoke personalized value to the individual with greater anonymity. In the user-held data environment, entry barriers decrease because a new generation of applications can be built on top of user-held data.

The user-held data model opens new opportunities for all stakeholders in the data market: individuals are able to finally exercise their autonomy and take the biggest advantage of the tools to control the use of their personal data. Personal data held by individuals themselves will be more than a give-away asset. Given the fact that each individual generates new data every day, the ability to own and control personal data provides individuals with the incentive to manage and control how that data is used and by whom. Without ownership rights over user-held data, the currently existing market and information asymmetries would not be eradicated and a contractual user-held data access regime would not work.

The user-held data model has the potential, therefore, to eradicate entry barriers that currently exist in the data ecosystem. Independent developers as well as brands suffer from a shortage of information about their customers and the fact that data that they have about their

⁷⁶ Smith, *supra* note 63, at 158.

⁷⁷ Drexler, *supra* note 2, at para. 32.

customers is inaccurate, outdated, or incomplete. The ability to access the data directly from the individual would eliminate such transaction costs and facilitate the creation of new types of products and services.

III.3.4. The Scope of Protection

Conferring property rights is important from the perspective of transaction costs that are associated with the factual exclusivity over user-held data and available remedies. As the owner of an asset, the owner can determine how to generate the most value from the asset. In terms of user-held data, individuals can either use applications that run on top of user-held data or give different degrees of access permissions to third parties. For instance, the individual can restrict access to certain categories of user-held data (e.g., finance or location data), use digital watermarks to ascertain that data cannot be used for any other purpose than indicated, or give certain permissions to use that data (e.g., store, bundle, or share with third parties).⁷⁸ Here, contract law together with legal and technical defaults assist the individual in maximizing the value of her user-held data.

Besides, property law grants the owner the strongest legal protection which is unlimited in time: the owner can seek protection against any third party that threatens to cause some inference with the object. The individual as the owner of her user-held data can rely on the means of legal redress embedded in the property law system. Such legal remedies involve injunctions and compensation for damages in case the user-held data had been corrupted. In addition to property law remedies, the individuals can use means of legal redress offered by other areas of private law – namely, contract and tort law – where appropriate.

Accordingly, conferring ownership rights over user-held data could benefit society: instead of relying on administrative law agencies that act on the basis of public law statutes (such as the GDPR), individuals can protect their legitimate interests by relying on private law instruments and procedures. This would undoubtedly increase the efficiency in the global personal data ecosystem, provide greater legal certainty, and stabilize transactions.

III.4. Moral Justifications of Personal Data Ownership

There is a widely acknowledged sentiment among individual consumers that each and every one of us should own our data.⁷⁹ Such an intuitive justification of conferring ownership rights to individuals over their personal data is extremely powerful. During the last two centuries, a strong philosophical school of thought (refined by Immanuel Kant) has advanced the argument that individuals have a unique and intimate bond with their personal property. Rudolph von Jhering remarked that: ‘In making the object my own I stamped it with the mark of my own person;

⁷⁸ Jurcys *et al.*, *supra* note 25, at 9-10.

⁷⁹ Angela G. Winegar & Cass R. Sunstein, How Much Is Data Privacy Worth? A Preliminary Investigation, 42(3) J. Consum. Policy 425 (2019).

whoever attacks it attacks me; the blow struck it strikes me, for I am present in it. Property is but the periphery of my person extends to things.’⁸⁰

This deep-rooted personal nexus between ‘Me’ and ‘My property’ is even more evident in the relationship between individuals and the data they constantly generate. Still, regardless of how strong such an ethical feeling is shared among the members of the society, moral theory alone is practically meaningless to unless: (a) individual consumers have tools that help them have copies of their data and control how that data is used; (b) there is a clear delineation of what personal data such ownership rights cover; and (c) there is a strong economic rationale to justify the conferral of ownership rights over personal data. In the recent literature on data ownership, some scholars have highlighted that granting ownership rights over new types of assets require solid economic justification.⁸¹ Justifications are also needed because private property empowers individuals to make decisions about the use of a scarce resource.⁸² In the following sections, we will address these points focusing on the economic considerations that underpin ownership of personal data.

As such, debates about ownership of user-held data inevitably touches upon psychological and ethical questions of identity which are best reflected in so-called personality theories of property. Some legal thinkers argue that the debate about data ownership should begin from personality theory.⁸³ There are some who go further and submit that property law is inappropriate or outdated to tackle issues related to data ownership without offering any specific reasons, explanations or practical recommendations for any working alternative. In the following paragraphs, we briefly discuss some of the main claims of personality theory and offer our perspective on how it fits into the market-driven narrative about data ownership.

III.4.1. Personality Theory and Data Ownership

One of the most powerful normative arguments invoked in the debate related to personal data ownership is that personal data is closely related to the individual. This personality theory emphasizes the emotional bond between the individual and her personal data; personal data is deemed as a manifestation of the individual’s self, personal data is like a digital twin or manifestation of ‘me’, and, as such, should be considered properly mine. Such a close emotional bond and the fact that the individual is the source of the data does not automatically argue in favor of allocating ownership as an economic right to commercially exploit such data to this person.⁸⁴ Still, personality theory offers a broad normative principle to justify an expansive conception of ownership at a more granular level.⁸⁵ The authors of this article have no intention to engage in the broad concepts and themes that can emanate from these debates about the notion

⁸⁰ George B. Newcomb, *Theories of Property*, 1(4) *Political Sci. Q.* 595, at 604 (1886).

⁸¹ Drexl, *supra* note 2, at 260 (paras 9-10) and 277 (104-109).

⁸² Waldron, *supra* note 65.

⁸³ Elizabeth M. Renieris, *Do We Really Want to “Sell” Ourselves?*, <https://hackylawyer.com/f/do-we-really-want-to-“sell”-ourselves>; Delacroix & Lawrence, *supra* note 5, at 239.

⁸⁴ Drexl, *supra* note 2, at 267 (para. 40); Hummel, *supra* note 2, at 3.

⁸⁵ Jeremy Waldron, *The Right to Private Property*, ch. 8-10 (1989).

of personality. Yet, in the following sections we briefly address some of the key themes offered by the most famous advocate of personality theory of ownership, G.W.F. Hegel.

Hegel belongs to the tradition that takes the view that there is an intrinsic connection between private property and personal freedom. According to this view, having at least a minimal amount of private property is essential to the development and maintenance of the capacities and self-understandings which make up a free personality and an individual. It is for this reason that a Hegelian account is often referred to as personality theory.⁸⁶ Hegel insists that it is only in possession of property that I ‘become an actual will’⁸⁷ and ‘give my will existence.’⁸⁸ Property, he claims, is a possession which belongs to me as a certain person, and in which my person as such comes into existence. As such, for Hegel, property is an essential condition of freedom and personhood. Hegel’s account of property centers on the contribution that property makes to the development of the self, ‘superseding and replacing the subjective phase of personality’.⁸⁹ Property actualizes – gives external reality – to what would otherwise be the mere idea of individual freedom.

An important consequence of this conception of property is that property is not – or not principally – a means towards furthering the person's freedom, as it is on some other normative theories of property. Property is, rather, the ‘first existence [*Dasein*] of freedom’ itself and as such is ‘an essential end for itself.’⁹⁰ The fundamental difference between Hegel’s talk of ‘putting one’s will into a thing’ and, for example, a Lockean theory of ‘mixing labour’ with things to form a claim to ownership lies in this relationship between property and freedom: ‘If emphasis is placed on my needs, then the possession of property appears as a means to their satisfaction, but the true position is that ... property is the first embodiment of freedom and so is in itself a substantive end.’⁹¹ In this way, Hegel regards property as a stage in the growth of individual *and* social responsibility. He saw the freedom embodied in property as an ultimately positive freedom – freedom to choose rationally and responsibly for the wider social good.

What does this perspective to ownership as the realization of personal freedom mean for data ownership? Just as with other types of objects, ownership of personal data is crucial to human flourishing, and the law should respect the bonds by creating and enforcing private property rights that are central to our self-actualization as individuals. This is a familiar line of argumentation to lawyers: Harvard Professor W.W. Fisher, for example, identified ten domains in which private property could contribute to human flourishing: peace of mind, privacy, autonomy, self-realization as a social being, self-realization as an individual, security and leisure, responsibility, identity, citizenship, and self-expression.⁹²

⁸⁶ For examples of Hegel’s influence see Waldron, *ibid.* and works by the English idealists, most notably by T.H. Green, who emphasized the contribution that ownership makes to ethical development, to the growth of the will and a sense of responsibility. See Colin Tyler, Thomas Hill Green, *Stanford Encyclopedia of Philosophy*, (June 7, 2011) <https://plato.stanford.edu/entries/green/#7>.

⁸⁷ Georg Wilhelm Friedrich Hegel, *Elements of the Philosophy of Right*, Section 46 (2003).

⁸⁸ *Ibid.*

⁸⁹ *Ibid.*, Section 41a.

⁹⁰ *Ibid.*, Section 45R.

⁹¹ *Ibid.*, Section 46A.

⁹² William W. Fisher, *Theories of Intellectual Property*, cyber.harvard.edu/people/ffisher/iptheory.pdf.

III.4.2. Responding to Market-Driven Denial of Personal Data Ownership

Personality theory perspective to data ownership raises a number of important theoretical questions abouts personality, the limits of autonomy, inherent biases in the ways how people perceive their data⁹³ and their relationship to property.⁹⁴ Although they might provide broad normative principles supporting an extension of ownership to data, those arguments offer little practical guidance to the actual functioning and possible regulatory approach towards data markets in more specific settings.

If we look at the reality in the data ecosystem, it is clear that the ‘Big 4’ have long managed to separate data from the individual and commodify it in ways that have allowed them to accrue trillions dollars of revenue, whilst the individuals from whom this data is derived receive nothing. In other words, various categories of observable and derived data about the individuals’ behavior and preferences have long ago been separated from the individual and put to commercial use; such data acquires an independent commercial life. Actually, from a purely business perspective, businesses’ high legal and economic risk associated with the mere fact of holding customer data led to the practice where businesses try to depersonalize data, i.e., to remove as many personal identifiers from the data as possible. That explains why the value of personal data about each and every customer is not as valuable of an asset as the aggregate categories of data.⁹⁵ In such a situation, it becomes quite clear that it is in the interest of those data gathering companies to invoke arguments that the data about their customers (especially, observable and derived data, as outlined in Section 2.3. above) is not personal, and for that reason individual customers have no legal ground to claim any pecuniary compensation from it. Furthermore, it is also in the interest of the big tech to deny that personal data could be deemed an object in the property law framework.

One of the primary objectives of property law is to guarantee legal certainty of the rights of the possessor. A user-held data model offers multiple responses to the market-driven denial of data ownership rights conferred to the individual. First, technological tools that help define the boundaries of user-held data by putting it into the personal data cloud eliminates the missing clarity as to what data is in the individual’s possession. Second, as an owner of the data held in the personal data cloud, the individual is able to use private law means to enforce one’s rights stemming from private law; private enforcement of one’s rights is arguable much more efficient than guarantees afforded by such public law instruments as the GDPR or CCPA.⁹⁶

The GDPR and CCPA have not benefited the individual as much as they benefit the large technology companies because their power has become even more centralized. They make the already opaque data market even more opaque: when Google had decided to eliminate third-party cookies relying on privacy considerations, it also meant that nobody would be able to use

⁹³ Winegar & Sunstein, *supra* note 73, 425.

⁹⁴ See Hummel, *supra* note 2 (who identifies multiple dimensions that are vital for informational self-determination).

⁹⁵ Emily Steel, Callum Locke, Emily Cadman & Ben Freese, How Much Is Your Personal Data Worth?, Financial Times (June 12, 2013) <https://ig.ft.com/how-much-is-your-personal-data-worth/>.

⁹⁶ Brave, Europe’s governments are failing the GDPR’ (April 2020) <https://brave.com/wp-content/uploads/2020/04/Brave-2020-DPA-Report.pdf>.

cookies except Google itself.⁹⁷ The same is true when we look at the impact of the GDPR and the CCPA on businesses. We argue that one of the most unfortunate unintended consequences of the GDPR and the CCPA was the strengthening of the market position of the largest technology companies: having and the talent, business knowledge, and resources, the compliance with the requirements of the GDPR and CCPA had relatively smaller burden than to the companies that did not have hands-on experience in handling and exploiting customer data for commercial purposes.

From an economic perspective, markets usually tend to move towards more efficiency. Hence, various attempts – be it by the regulator or by certain market players – to limit the amount of value that can be extracted by anyone usually are not successful. Broadly speaking, the ultimate goal is to create an environment where more value can be generated in the future, not less. In a user-centric, user-held data model the individual has the necessary technological tools and legal ownership over the data that is held in the personal data cloud. Such user-held data is more rich and better than the data held by any other stakeholder in the market. This will help individuals to accumulate more data on themselves that is private (because it is processed locally) and also get long-term value.⁹⁸ Businesses and service providers are going to compete among each other trying to build applications that run on top of user-held data and that provide direct value to the individual.

IV. USER-HELD DATA OWNERSHIP: PRACTICAL IMPLICATIONS

In Section 3, we have provided legal, economic, and moral arguments to show that user-held data meets the requirements to be considered an asset in property law terms. We also clearly stated that our argument about data ownership is a limited one; it applies only with regard to data that is held by the individual in the personal data cloud (and remains neutral on any data that is not in a personal data cloud). In this section, we outline four areas in which user-held data provides opportunities for delivering progress, innovation, and more general benefits to society.

IV.1. Technical Superiority

User-held data is technically superior to the data held by third parties. User-held data contains not only input data provided by the individual herself but also observed, observable, and derived data from different services and activities which are stored on an individual's personal data cloud (not on a service provider's database). In practice, this means, for example, that all that is generated while the individual is using an application or browsing the web is being stored in the

⁹⁷ Gerrit De Vynck & Naomi Nix, Google Follows Apple in Ending Third-Party 'Cookies' in Ad-Tracking, Bloomberg, (January 14, 2020) <https://www.bloomberg.com/news/articles/2020-01-14/google-plans-to-move-forward-with-changes-to-ad-tracking-tools>.

⁹⁸ Differently from the current situation where data serves as a counter-performance other than money in exchange for digital content and digital services. See Axel Metzger, A Market Model for Personal Data: State of the Play under the New Directive on Digital Content and Digital Services' in Sebastian Lohsse, Reiner Schulze, Dirk Staudenmayer (eds), *Data as Counter- Performance – Contract Law 2.0?* (2020) 25.

individual's personal data cloud. In such a way, user-held data is (a) very broad: it contains all types of data about the individual (we can think of a 360 degrees view of an individual); (b) such data is very rich and up-to-date (i.e., it covers all historical data about the individual).

The technical superiority of user-held data has massive implications in the context of a highly centralized data ecosystem: if the user has control of the most accurate, up-to-date, and granular personal information, any data that third-party service providers have previously gathered will soon be rendered obsolete. In other words, user-held data can easily outperform data held by third parties.

Furthermore, technical superiority has some important implications from the security point of view. Since user-held data is kept in personal data clouds that belong to each individual separately, it means that the likelihood of that data being hacked or stolen by 'bad' actors is much lower than in a highly centralized data environment. There are additional safeguards that can be attached to the data that is held in personal data clouds: for instance, it is possible to distribute data on an individual data subject on an object level by making it even harder for bad actors to take advantage of it (imagine, your date of birth does not exist as a single record, but is broken into a thousand records; so even if somebody hacks it, it will be extremely difficult to piece it together to gain access to the original record).

In addition, user-held data offers additional technical advantages related to the various ways data is being processed. In the traditional centralized environment, sending data *from* an application *to* the cloud and back could be associated with significant technological limitations, the time needed to process a request, and possible security breaches if someone were to intercept the transmitted request. User-held data provides for the possibility of 'zero-lag' data processing which means that various functions can be processed in real-time in a personal data cloud. This leads to potentially significant efficiency improvements. For example, at the time of writing, the best services in the world offer 90-millisecond processing speed from the time when the request is sent from an edge device to the centralized cloud and returned back to the device. Such a time lag could have catastrophic consequences if we talk about use-cases such as local AI. Today compute-intensive services such as autonomous driving process data at the application itself, as any lag would jeopardize the service's integrity. In the long term, zero-lag data processing will be of crucial importance for building applications such as personalized AI.

IV.2. Business Superiority

Generally speaking, there are three types of use cases to deploy user-held data for the benefit of the individual. First, the individual can download so-called 'data widgets' that help better understand data that is accumulated in the personal data cloud. For instance, a data widget can provide better insights and analytics about one's health data that comes from different health devices (e.g., Apple Watch, Oura ring, and other IoT devices such as smart scales) or find correlations between different data types, such as an individual's sleeping data and spending

habits. Such data widgets run on top of user-held data (i.e., no data leaves the personal data cloud). Individuals can delete such data widgets at any time without the risk of losing any data.

Second, the individual can ‘activate’ user-held data by using ‘local data apps’. Similar to data widgets, local data apps run on top of user-held data, but they are more complex and sophisticated. Local data apps would perform many functions locally (i.e., an individual’s personal data cloud could be utilized without sending that data to the service provider’s cloud). Besides, in a user-held data environment, the individual is able to exercise granular control of *what* data is accessed by the local data app and *how* it is used. An example of a local data app might be an anonymous content reader that stores reading habits, preferences, favorites with the user, while leaving no trace on the content publishers and guaranteeing full privacy for the user.

Third, the individual can interact with brands and third-party service providers through personal data profiles. Such personal data profiles are generated based on the user-held data. Personal data profiles represent the most up-to-date and most accurate information about the individual. Personal data profiles allow brands and service providers to get a better view of the individual and offer bespoke services. A data profile example could be retail consumption and offering this history in an abstract way where only top line information is available, different retailers could offer the individual tailored offers and products.

From a business point of view, a user-held model offers innumerable incentive and efficiency improvements. By being able to directly interact with their customers, businesses no longer have to search for third-party sources of data about their customers. The data is accessed directly from the user and is also more accurate than any other data that is currently available. As a result of such direct interaction, brands and service providers can focus on delivering bespoke products and services that are best suited to meet the expectations and needs of the individual. Brands and services also know that the interaction with the individual and the use of customer data comes from a legitimate source (the individual herself), which generates greater trust. More importantly, and as a result of the previous point, brands and service providers benefit from the fact that they do not need to be concerned about the enormous search costs that they would otherwise incur in a centralized data environment. On a macro scale, a user-held data model also facilitates competition among businesses in offering the best value to individual customers.

IV.3. Legal Superiority

Recognition of legal ownership rights to the individual over user-held data makes such data legally superior. In addition to legal certainty and stability in the society, legal ownership of user-held data has some long-term implications on the transparency of data use. The ability to physically own one’s personal data held in the personal data cloud means that the individual also has the ability to determine how that data is being used. Legal ownership of user-held data empowers individuals with the ability to exercise granular control over who can access that data and under what terms. In a user-held data environment, it is the individual that determines who can access the data and how that data is used.

Legal ownership of user-held data, therefore, has the potential to improve the legality of data use: instead of being forced to click and accept terms and conditions of the service provider, it is the individual who determines under what conditions third-party app developers and brands can access user-held data. For instance, the individual can choose the degree of permissions she wants to provide to a third-party app developer (and not vice-versa): the individual can decide to interact anonymously or give permissions to access certain categories of user-held data. The individual can also provide ex-ante permission to track, store, bundle, or share certain categories of data. In the user-held data environment individuals have the actual power to set their own terms and grant prior express permissions at a more granular level.

Recognizing ownership rights over user-held data also changes the perspective towards data portability. The simplified narrative of data portability anticipates one of two scenarios: (a) the individual can order that Service Provider A transfers data about that customer to Service Provider B; or (b) the individual can request a copy of data from Service Provider A and then ‘bring’ that copy to the Service Provider B. In a user-held data environment, the data ‘lives’ in the personal data cloud which the individual always has in her personal control. User-held data no longer travels from one service provider to another. Instead, such user-held data is activated by means of data widgets, local data apps, and personal data profiles. In other words, user-held data never leaves the personal data cloud but is ported *within* that personal data cloud.

IV.4. Social Superiority

A final set of advantages with a user-held data model and recognition of personal data ownership might be described as social superiority. By social superiority, we refer to changing perceptions of how individuals understand their personal data and its long-term value. Legal recognition of data ownership would trigger a greater awareness and sense of proprietorship over that data that might contribute to greater levels of data literacy within society. Such literacy would have a number of collateral benefits. Not least, it would make it harder for bad actors and technology giants to take advantage of a lack of knowledge or interest in personal data, possibly introducing a new degree of discipline into the information ecosystem.

One possible attempt to facilitate data literacy is an attempt to use so-called ‘privacy icons’ and data disclosures.⁹⁹ A number of technology companies such as Mozilla and Apple try to introduce visual icons that can help individual users of online services or hand-held devices to better understand what types of personal data the third-party service is able to access and for what purposes such data can be used. Such data disclosures aim to bridge the gap between the ‘take-it-or-leave-it’ scenarios of accepting terms and conditions and privacy policies, information and notice overload, and cognitive biases in helping individuals to give their prior informed consent. Privacy icons and data disclosures are an important step from risk-based scenarios

⁹⁹ See Zohar Efroni, Jakob Metzger, Lena Mischaou & Marie Schirmbeck, ‘Privacy Icons: A Risk-based Approach to Visualization of Data Processing’, EDPL 352 (2019).

related to personal data towards individual empowerment stemming from the ability to get value from personal data.

A related set of advantages of a user-held data model that allows individuals to exercise granular control over their data, connect to autonomy and the capacity of the individual to live their lives according to their own reasons and motives. A greater level of data literacy would seem to bolster the capacity of individuals to self-reflect and endorse their own values through their choices and actions. A user-held data model seems to serve the interests of personal autonomy, which, in turn, correlates with freedom and happiness.

Such arguments about the social superiority and possible psychological benefits (in terms of individual happiness) of informational self-determination might seem somewhat speculative and lacking in empirical support, but it is worth noting that these kinds of arguments have been accepted in other contexts, such as data protection law, as well as medical law.

V. LOOK TO THE FUTURE

In this paper, we aimed to provide a fresh perspective to the recent debate on data ownership and explain how emerging user-held data models change the previously adopted position that rejects the notion of ownership of data. We argue that in an environment of continuous technological change, the issue of recognition of property rights over new types of resources is unavoidable. This is the case with regard to data as well. We show how the largest technology companies have been able to harness huge amounts of personal data of their customers and benefit from commercializing different categories of aggregate information about individuals. Moreover, large technology companies have been able to successfully defend their exclusive ownership rights over such data arguing that it is their proprietary asset and trade secret.

It is our position that individuals should be able to make use of the same technologies as the large companies and claim ownership rights over data they are able to aggregate in their personal data clouds. We argued that user-held data meets all the requirements of an 'asset' in property laws regardless of the fact that data could be deemed as being intangible. More specifically, we showed that such user-held data is specifically defined, has independent economic value to the individual, and can be freely alienated. We also show the economic benefits property law type of entitlements over user-held data are superior over the meager rights that are afforded by public law instruments such as the GDPR or the CCPA to individuals vis-a-vis third-party service providers who hold and benefit enormously from the information about individuals.

There is a clear market and technology trend to build personalized AI tools for individuals that will activate user-held data and open the door for new types of direct interactions between businesses and consumers. Therefore, the recognition of ownership rights over user-held data is one of the key pre-conditions to empower individuals to exercise granular control

over how that data is used and under what terms.¹⁰⁰ There exists a natural shift, as well as pressure, to formalize rights over resources that technologies enable us to utilize. The rules of ownership and title allow for more elaborate forms of use than simple possession does; divided rights are not really possible when all we have is a notion of possession.¹⁰¹

In this article, we aimed to explain and justify the recognition of ownership rights only over user-held data. However, we did not make any claims about the legal status of data that is outside of the personal data cloud. Further debate is needed to determine the optimal legal regime for such categories of data that are not user-held.

¹⁰⁰ See Smith, *supra* note 63, at 152, who argues in the world of zero ‘transaction costs, much of what is done by the law of property, could indeed be accomplished using only tort and contract and explains that law of property plays an ‘essential role’ in a positive transaction cost world.

¹⁰¹ Smith, *supra* note 63, at 158.