DATA OWNERSHIP—A PROPERTY RIGHTS APPROACH FROM A EUROPEAN PERSPECTIVE

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ABSTRACT

Data has become one of the most important resources in post-modern information society. However, European civil law does not reflect this development adequately. In fact, so far, European civil law seems to struggle with handling data as a legal entity. Against this background, the article provides a transnational overview and a comprehensive analysis of the legal situation in Europe. It discusses why data ownership is widely perceived as a problem on this side of the Atlantic and how this perception can be overcome by a fundamental property law approach. Taking into account economic realities, we argue that European property law provides a sufficient framework for establishing a theoretical concept of data ownership. Therefore, we draft the dimensions of a data ownership concept by proposing potential criteria for assigning ownership and analyzing both positive access and negative restriction rights.

Keywords: data ownership, property law, European Community law, protection of personal data, fundamental freedoms, data sovereignty, property asset, tangible and non-tangible property, transfer of ownership, assigning data ownership rights, rights of use and defensive rights, restriction rights against others

I. WHY DATA OWNERSHIP MATTERS

Data is a duplicable virtual entity, i.e., neither tangible nor exclusive by nature. Looking into nowadays digital economy, though, we quickly realize that data is de facto regarded as if it were a "thing" that can be owned like goods and chattels. According to the European Commission, "[d]ata has become an essential resource for economic growth, job creation, and societal progress."[1] In the big data era it is indeed uncontested that data is *an* asset, if not *the* asset of the 21st century.[2] However, legal analysis shows that private law in Europe does not reflect this reality so far. Scholars and practitioners claim that private laws consistently struggle with handling data as a legal entity.[3]

Against this background and taking into account all major European legal systems, we argue that European property law already provides sufficient common principles to establish a comprehensive concept of data ownership.

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1. European Commission, *Building a European Data Economy*, at 2, COM (2017) 9 final (Jan. 10, 2017) [hereinafter *Building a European Data Economy*].

2. *E.g.*, European Consumer Commission, Meglena Kuneva, *Personal Data is the New Oil of the Internet and the New Currency of the Digital World*, Keynote Speech at the Roundtable on Online Data Collection, Targeting and Profiling, SPEECH/09/156 (Mar. 31, 2009).

3. Wolfgang Kerber, *A New (Intellectual) Property Right for Non-Personal Data?*, GEWERBLICHER RECHTSSCHUTZ UND RECHT, INTERNATIONALER TEIL [GRUR INT.] 989, 990 (2016); Robert Hieke, *Big Data*, 5 ZEITSCHRIFT ZUM INNOVATIONS- UND TECHNIKRECHT [INTER] 10, 11 (2017); Artur-Axel Wandtke, *Ökonomischer Wert von Daten*, MULTIMEDIA UND RECHT [MMR] 6, 6 (2017); Karl-Heinz Fezer, *Theorie des immaterialgüterrechtlichen Eigentums an verhaltensgenerierten Personendaten der Nutzer als Datenproduzenten*, MMR 3, 5 (2017) (claiming the need for a sui generis right).

For this purpose, we will give a concise summary of the relevant supranational framework before diving into an analysis of national laws. By applying a property law approach, we will then take a close look at whether data can be seen as a tangible good and how ownership rights are acquired and transferred. Subsequently, we will discuss specific problems regarding data ownership and marketability, particularly data theft, bankruptcy, and lien.

Thereafter, we will draft the dimensions of a data ownership concept by proposing potential criteria for assigning ownership and analyzing both positive access and negative restriction rights. Finally, the data ownership concept will be brought into line with conflicting rights such as personal rights, privacy, and freedom of information.

II. EUROPEAN FRAMEWORK

On a European level, there is no concerted approach to the question on data ownership. While there still is a lack of clarity whether data ownership of any kind is accepted, some of the underlying legal principles and legal norms might come in handy to develop guidelines to a data ownership.

A. European Primary Law

As for the European primary law,[4] which prevails over other legal sources, the treatment of data is affected by the Charter of Fundamental Rights, the European Convention on Human Rights, and the Treaties of the European Union.

4. European Primary law is the supreme law of the European Union and is at the apex of the European legal order. It mainly consists of the Treaties of the EU out of which the latest—the Treaty of Lisbon—implemented the current Treaty on European Union [TEU] and the Treaty on the Functioning of the European Union [TFEU], *see* consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, Oct. 26, 2012, 2012 O.J. (C 326) 01.

1. Charter of Fundamental Rights of the European Union and European Convention on Human Rights

Data is an information carrier regarding subjects or circumstances; in case of personal references, the European law provides specific rights to the data subject. Concerning this matter, article 8 of the Charter[5] lays down that everyone has the right to the protection of personal data concerning him (no. 1) and that such data must be processed fairly for specific purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law (no. 2). Therefore, the European primary law states some sort of data sovereignty on behalf of the individual. Even if personal data is only a small aspect of the overarching concept of data ownership, this very basic principle has to be kept in mind regarding the acceptance of exclusive rights on data.

Another primary source of EU law is the European Convention on Human Rights (ECHR).[6] The ECHR does not provide the protection of personal data in particular, but the protection of privacy in general.[7] To that effect, informational self-determination is deeply associated with personal freedom and privacy. Hence, to this principle, data protection law sets up preconditions for the handling of data.

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5. As can be derived from Art. 6 (1) TEU, the Charter of Fundamental Rights of the European Union [CFR] is part of the European primary law. *See* Charter of Fundamental Rights of the European Union, Oct. 23, 2012, 2012 O.J. (C 326) 02.

6. *See* Council of Europe, Convention for the Protection of Human Rights and Fundamental Freedoms, ETS no. 005 (1950). Art. 6 TEU incorporates the Convention as primary law. If necessary, the Court of Justice may refer to these principles in order to complement the fundamental rights protected in the CFR.

7. Art. 8 of the ECHR states:

> 1. Everyone has the right to respect for his private and family life, his home and his correspondence.
>
> 2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

2. Digital Single Market

In contrast to the rather personal approach of data protection, the EU also stipulates economic interests in its primary law, which are related to the potential use and marketability of data as an asset. According to article 3(3) of the Treaty on European Union (TEU), the EU shall establish an internal market, i.e., create a harmonized framework for the free movement of goods, services, and capital. This facilitates the promotion of competition, jobs, and reduction of trade barriers.[8] With respect to the proceeding digitalization, a common European framework is needed to provide specific rules for the marketability of data.

Therefore, the European Commission proposed a "Digital Agenda for Europe in the year 2020." Its main objective is to create a digital single market that covers digital marketing, e-commerce, and telecommunication. In January 2017, the Commission defined this agenda by adopting a draft communication on building a European Data Economy. The plan states that free movement of data requires the reduction of unjustified restrictions, like public parameters for the location of data for storage or country-specific law approaches in regard to data and furthermore, the necessity of data access, the facilitation of data sharing, and the acceptance of a data producer's right, i.e., the "right to use and authorize the use of non-personal data."[9] As a consequence of this agenda, an exclusive property right of data could be demanded.

3. Fundamental Freedoms

The above-mentioned strategy of the Commission has a strong relation to the fundamental freedoms of the single market that are laid down in the Treaty on the Functioning of the European Union

8. *Internal Market*, EUR-LEX, https://perma.cc/UX99-Z4T6.
9. *See Building a European Data Economy*, *supra* note 1, at 13.

(TFEU). Three of these principles provide valuable starting points for an approach to data ownership.

The principle of *free movement of goods* (articles 28–37 TFEU) appoints the elimination of customs duties or quantitative restrictions as well as the prohibition of measures having an equivalent effect.[10] Referring to the term "goods," the European Court of Justice (ECJ) implies products that can be valued in money and that are subject of commercial transactions.[11] Without prejudice to the ECJ's decision, it is commonly agreed that the free movement of goods requires some sort of tangibility of the product.[12] Nevertheless, one must take into account that even gas, electricity, or software, which is stored on a data carrier, are covered by this principle. These exceptions exist irrespectively of their concrete physical manifestation, which suggests that data could also be captured. Hereafter, the equal treatment of goods and data demands for the assignment of property to one individual.

Besides the *free movement of goods*, articles 63–66 TFEU regulate the *free movement of capital* within the European Union. European legislation does not provide any legal definition of the term "movement of capital," which is why one refers to Annex 1 of Directive 88/361 that lists several categories, like loans, liens, or any other capital movement,[13] but not data. Nevertheless, data are similar to the categories not exhaustively mentioned: if data was seen as a form of currency, the directive would apply. However, this is clearly not the case. There are neither data exchange rates, nor a maximum volume of data in circulation nor inflation rates. Quite the contrary: the more data is available, and the more analysis options exist, the more valuable the data becomes.[14] That is why data has a

10. Marius Maciejewski, *Free movement of goods*, EUROPEAN PARLIAMENT (Oct. 2018), https://perma.cc/W2AX-RUDY.
11. Case 7/68, Comm'n v. Italy, 1968 E.C.R. 423.
12. WALTER FRENZ, 1 HANDBUCH EUROPARECHT 93 (2d ed., Springer 2012).
13. Council Directive 88/361, Annex 1, 1988 O.J. (L 178) 8.
14. Dirk Heilmann & Thomas Liegl, *Big Data und Datenschutz*, HANDELSBLATT RESEARCH INSTITUTE (2013), https://perma.cc/8DEV-Q6HW.

unique value for some stakeholders: the business model of social networks, cloud computing companies, or e-commerce services is built entirely upon data. Though it is harder to rate and specify data in the offline world, even there it is used to assess customer behavior and consequently benefit economically from it. Therefore, it cannot be denied that data is a modern form of a financial asset, which is why the underlying idea of protecting the free movement of capital applies in principle to data as well. Therefore, one might argue that the principle of *free movement of capital* can be seen as an appreciable normative landmark.

Furthermore, the TFEU stipulates in articles 56–62 the *free movement of services*, which includes only intangible and professional activities (e.g., the provision of digital services like personalized advertisements based on Facebook likes).

Thus, the Fundamental Freedoms of the EU and the primary law deliver indications for the use and trade of data (services). Insofar, the acceptance of exclusive rights would strengthen the economic marketability of data.

B. European Secondary Law

For a comprehensive overview of the European framework, we also need to take into account European secondary legislation, i.e., regulations and directives passed by European institutions such as the Parliament or the Commission.[15] Secondary legislation is a level down in the normative hierarchy, but provides rather detailed regulations. In search of data-specific legislation, we come across the recently passed General Data Protection Regulation (GDPR),[16] the Directive on e-Privacy, and the Directive on e-Commerce.

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15. TFEU Art. 288.

16. European Parliament and Council Regulation 2016/679, Apr. 27, 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, 2016 O.J. (L119) 1.

1. Steps Toward "Data Sovereignty" in the GDPR

The GDPR entered into force in May 2018 and replaced the directive on data protection from 1995.[17] As a regulation it is mandatory law and directly applicable in all member states, facilitating a further harmonization of data protection in the Union. Even though the GDPR does not provide specific regulations for any form of data ownership, there are two pertinent developments worth emphasizing.

Firstly, the GDPR stipulates the *right to erasure* (most commonly labeled as a "right to be forgotten"), which gives the data subject the right to obtain, from the controller, the erasure of personal data concerning him without undue delay. It particularly applies if the data subject withdraws his consent on which the processing is based.[18] In other words, the individual is granted a power of exclusive disposition concerning the processing of personal data that is—to some extent—comparable with the power of the owner over his property. In terms of property law, this could be understood as a negative dimension of an exclusive right, i.e., the power to exclude others from using one's property.

Secondly, the GDPR introduces a fundamentally new *right to data portability*. Article 20 gives the data subject the right (a) to receive the personal data concerning him from the controller in a structured, commonly used and machine-readable format, and (b) to transmit those data to another controller without hindrance from the controller to which the personal data have been provided. In this regard, it is an accompanying measure to the *right to access*.[19] It addresses the so-called lock-in[20] that arises particularly from social

17. European Parliament and Council Directive 95/46/EC, Oct. 24, 1995, on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation) [GDPR], 1995 O.J. (L281) 31 (EC).

18. GDPR Art. 17 § 1(a).

19. GDPR Art. 15.

20. Jürgen Kühling & Mario Martini, *Die Datenschutz-Grundverordnung: Revolution oder Evolution im europäischen und deutschen Datenschutzrecht?*,

networking services (SNS); the underlying reasoning is to enable the individual to change from one SNS to another with just a single mouse click.[21] As a matter of fact, it can be seen as a brand new instrument in exercising the individual's power over his data. By granting the data subject the capacity to decide about further processing and access, the right to data portability goes way beyond the well-established principle of consent.[22] Therefore, it can be seen as another step towards a (privacy-based) concept of data ownership.

2. Data as a Good in the Directive on e-Privacy

The ePrivacy Directive[23] requires member states to ensure the *free flow of personal data* in the Union—a wording that can also be found in other secondary legislation, e.g., article 1 (1) GDPR. As such, it serves as a reference to the fundamental freedoms in general and the free movement of goods in particular. It indicates that data is considered as a transferrable asset or at least as comparable to tangible goods that may be subject of a free movement between member states.

The ePrivacy Directive, however, provides an additional reference point; namely, measures should be taken to prevent unauthorized access to communications including both the contents and any data related to such communications.[24] The prevention of unauthorized access draws a connection to property rights: the "owner" of

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EUROPÄISCHE ZEITSCHRIFT FÜR WIRTSCHAFTSRECHT 448, 450 (2016); Peter R. Benson, *Data Portability the Antidote to Data "Lock-In,"* Electronic Commerce Code Management Association [ECCMA] White Paper on Data portability (Apr. 1, 2009), https://perma.cc/VG4Q-EFR5.

21. European Commission, *Impact Assessment*, at 106, SEC (2012) 72 final (Jan. 25, 2012).

22. Tim Jülicher et al., *Das Recht auf Datenübertragbarkeit – Ein datenschutzrechtliches Novum*, ZEITSCHRIFT FÜR DATENSCHUTZ [ZD] 358, 361 (2016).

23. European Parliament and Council Directive 2002/58, July 12, 2012, concerning the processing of personal data and the protection of privacy in the electronic communications sector, 2002 O.J. (L 201) 37 (EC) [hereinafter Directive 2002/58] (the directive is about to be reformed by a "ePrivacy" Regulation in 2019).

24. *Id.* at recital no. 21.

data is by law entitled to exclude others from accessing his (im)material property—just like the owner of a tangible good.

3. Parallels Between Safekeeping and Hosting Contracts in the Directive on E-Commerce

Other sources of secondary legislation reveal further similarities of data and tangible property. Article 14 of the Directive on e-commerce,[25] for instance, regulates the liability of a host provider, i.e., someone who provides data storage on a contractual basis. It stipulates that the host provider is not liable for the information stored on the condition that he does not have actual knowledge of illegal activity or information. In this regard, hosting contracts are quite similar to safekeeping contracts, since both usually require subjective elements such as said knowledge to hold the safekeeper or host liable.[26] This implies another parallel reasoning for goods and data.

C. Interim Findings

Even though there is no specific legislation addressing data ownership on a supranational level, we discovered a considerable number of data-related provisions that express two major tendencies: firstly, recent European legislation strongly reflects the increasing relevance of data, both economically and societally. Secondly, the European framework suggests that data and its marketability are generally comparable to the tangible goods regime. Against this background, European legislation illustrates not only a common underlying trend but also provides general conditions for determining a pan-European concept of data ownership. However, European pri-

25. European Parliament and Council Directive 2000/31, June 8, 2000, on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market, 2000 O.J. (L 178) (EC) 1 (the Commission is about to initiate the revision of the directive).

26. BÜRGERLICHES GESETZBUCH [BGB] [CIVIL CODE], Aug. 18, 1896, RGBL 195, as amended, §§ 688, 694 (Ger.).

mary law does not allow for a comprehensive supranational regulatory approach as core issues of civil law are exclusively subject to national legislation.[27]

III. NATIONAL LAWS IN EUROPE

As mentioned above, the core issues of civil law lie within the competence of the member states. Therefore, in this section, we focus on the framework of property law and its core principles on the national level. This aims to provide the basis for our approach by identifying commonalities within the member states' legal systems and transferring those rules that are applicable to our concept of data ownership to a European level.

A. Data as Tangible Property

On a national level, the previous findings lead to the question whether data can be considered a "thing" in terms of property law. More specifically, whether data can be considered as being corporeal in regards to the right in rem. This is basically the first crux of the matter.

1. Historical Influences and Preliminary Considerations

Historically, the term "thing" originated from the 1,500-year-old Roman *Corpus Iuris Civilis*, one of the first attempts within the history of modern law to unify and codify statutory rights regarding tangible and intangible property. The basic distinction was based on the possibility to touch an item.[28] If this was the case, the item was classified as corporeal; otherwise, it would be incorporeal. In some European legal frameworks, the legal term "thing" is restricted to

27. According to the principle of conferral, the EU shall act only within the limits of the competences conferred upon it by the member states, Art. 5 § 1, § 2 TEU—no competence has been given in this matter.

28. ROLF KNÜTEL ET AL., CORPUS IURIS CIVILIS – DIE INSTITUTIONEN 60 (4th ed., C.F. Müller 2013).

anything, except for corporeal objects, due to the narrow understanding of *von Savigny*. His interpretation eliminates all non-tangible assets from property law.[29] A ius naturale point-of-view allows for a wider comprehension of the term "thing." Codifications that have a stronger law of nature background, such as the French[30] and Austrian[31] examples, consider that property can also include non-tangible objects, inter alia obligations and debts. In all European legal systems, the classification of a "thing" as a legal good is essential in order to establish exclusive rights regarding utilization and the right to defend valuable assets.[32] The title of ownership, as the highest level of a legal right in property law, is a further common aspect within all national frameworks.[33]

The acknowledgement of corporeality as valuable in terms of property law is due to a tangible "thing" being marketable and the option to, therefore, use it as a security interest, for instance, placing a lien on it. It is even possible to have a usufruct solely on the grounds of the property asset of a "thing."[34] This demonstrates that the approval of an exclusive right through the unwritten laws of an intangible asset (for instance, energy or heat) must be based on its aptitude of circulation and its marketability.[35]

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29. FRIEDRICH CARL VON SAVIGNY, DAS SYSTEM DES HEUTIGEN RÖMISCHEN RECHTS 338 (Veit 1840); FRIEDRICH CARL VON SAVIGNY, DAS OBLIGATIONENRECHT ALS THEIL DES HEUTIGEN RÖMISCHEN RECHTS 23 (Veit 1851).

30. FRANÇOIS TERRÉ, DROIT CIVIL—LES BIENS 43 (9th ed., Dalloz 2014), referring to Art. 1240 CODE CIVIL [C. CIV.] [CIVIL CODE] (Fr.) [hereinafter C. CIV.].

31. ALLGEMEINES BÜRGERLICHES GESETZBUCH [ABGB] [CIVIL CODE], Jun. 1, 1811, Justizsammlung [JGS] No. 946/ 1816, as amended, §§ 285, 292 (Austria) [hereinafter ABGB].

32. ELKE HERRMANN, KERNSTRUKTUREN DES SACHENRECHTS 1 (Mohr Siebeck 2013); CHRISTIAN VON BAR, GEMEINEUROPÄISCHES SACHENRECHT 5, 6 (C.H. Beck 2015).

33. HERRMANN, *supra* note 32; VON BAR, *supra* note 32, at 227.

34. VON BAR, *supra* note 32, at 227.

35. Alexander Peukert, *Sonstige Gegenstände im Rechtsverkehr*, *in* UNKÖRPERLICHE GÜTER IM ZIVILRECHT 5, 95, 99 (Stefan Leible et al. eds., Mohr Siebeck 2011).

The same economic specifications apply to data. As a valuable property asset, data is an elementary subject of modern business relations, which we therefore need to give somehow its rightful place in property law—whether or not it is corporeal in terms of physics. A stronger focus on parameters like controllability and manageability may help to develop criteria to subsume data within property law and to constitute exclusive rights. Yet, through establishing these subject matters as factors, further problems arise.[36]

2. Identifying European Commonalities

The goal is to identify a common ground regarding an original European comprehension of a "thing" in terms of property law. Identifying commonalities is a demanding task, since no universal European property law has been established.[37] Theoretically, we would need to examine and compare more than twenty-eight different legal frameworks. This would go beyond the scope of this article. We, therefore, narrow this study's focus down to the major European legal methods defining res incorporales. In the following, these concepts are summarized and contrasted whilst differences and similarities will be determined. The simple existence of legal concepts like personal property and possession themselves may just be the only mutuality.

The inconsistency of the definition of the term "thing" within European property law will, therefore, be exemplarily illustrated. Austria[38] and Scotland, for instance, have some of the most liberal approaches in Europe. Everything that can be distinguished from a person and is usable is legally defined as a "thing." Ownership includes everything that belongs to someone, regardless of whether it

36. VON BAR, *supra* note 32, at 166.

37. For a comprehensive overview of recent literature on European property law, *see* Caroline S. Rupp, *What's New in European Property Law?* 6 EUR. PROP. L. J. 87-110 (2017).

38. ABGB, *supra* note 31, at § 285.

is corporeal or not.[39] Within this context, it is understandable to constitute exclusive rights in reference to data.[40] However, a conservative perspective would claim that the legal definition needs to be restricted to tangible goods.

This problem also arises in Portugal and France. These countries provide quite broad definitions. The French Civil Code incorporates tangible and intangible "biens," i.e., goods.[41] In Portugal, anything that is an object of legal affairs can be treated as a "thing."[42] Despite this indifferent and general terminology, exclusive rights need some sort of corporality.[43] Concerning this matter, even gas or energy are materialized and are, therefore, tangible "things" in Portugal.[44] A comparable approach can be found in Greece. The civil law demands some form of tangibility and controllability, whilst even natural powers, energy, or heat are considered a "thing," if they are spatially controllable.[45]

Switzerland, which uses similar terminology, recognizes that natural powers are a legal "thing" in certain constellations.[46] In contrast, Germany assumes a rather narrow definition. The strict requirement of a steady corporeality excludes everything that cannot

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39. *Id.* at § 353.

40. *See* ELISABETH BERGER, REZEPTION IM LIECHTENSTEINISCHEN PRIVATRECHT UNTER BESONDERER BERÜCKSICHTIGUNG DES ABGB 57 (LIT Verlag Münster 2011).

41. TERRÉ, *supra* note 30, at 43; GERT BRÜGGEMEIER, HAFTUNGSRECHT: STRUKTUR, PRINZIPIEN, SCHUTZBEREICH 334 (Springer Science & Business Media 2006).

42. CÓDIGO CIVIL [C.C.] [CIVIL CODE], Nov. 25, 1966, DL no. 47344/66, as amended, Art. 202 (Portugal) [hereinafter C.C.].

43. *See* Art. 544 C. CIV. (Fr.); Art. 1302 C.C.; JOSÉ CARLOS DE MEDEIROS NÓBREGA, DIE ENTWICKLUNG DES PORTUGIESISCHEN SACHENRECHTS 71 (V&R unipress GmbH 2015); Erwin Beysen, *Frankreich*, *in* 4 SACHENRECHT IN EUROPA 177, 230 *et seq.* (Christian von Bar ed., Rasch 2001) [hereinafter SACHENRECHT IN EUROPA].

44. DE MEREIROS NÓBREGA, *supra* note 43, at 71, 72; Maria Margarida R.A.C. de Seabra & Yanko Marcius de Alencar Xavier, *Portugal*, *in* 3 SACHENRECHT IN EUROPA, *supra* note 43, at 177, 339, 347.

45. ASTIKOS KODIKAS [A.K.] [CIVIL CODE] Art. 947 (Greece).

46. SCHWEIZERISCHES ZIVILGESETZBUCH [ZGB] [CIVIL CODE] Dec. 10, 1907, SR 210, RS 210, as amended, Art. 713 (Switz.).

be sensibly demarcated from other objects,[47] like electricity.[48] Ownership of incorporeal goods is, therefore, not possible.[49] In Dutch civil law, these legal fundamentals are also indicated.[50] Common law in the United Kingdom sets no high value on the distinction between tangible and intangible things.[51] Instead, legal rights are usually not at all tied to any physical qualifications. Ownership or property rights may be established on any type of tradeable good.[52]

3. Interim Findings

In summary, all European laws use the word "thing" or a comparable expression as a key term. Interpretations, which allow wide comprehensions of the term, exist in various European legal frameworks. Commonalities on a superordinate level can be found in the appraisal of the "thing" as a potential property asset and the necessity for controllability. Therefore, distinguishing between tangible and non-tangible property is not mandatory for an asset, like data, to be classified within the law of property.

B. Ownership Rights in Europe

Ownership is usually understood as an exclusive right—a right of domination over a determined thing allowing the owner to possess enjoy fruits and benefits, and to act with as it pleases. The owner

47. BGB § 90.

48. Christina Stresemann, *§ 90 BGB margin no. 1,5*, *in* MÜNCHENER KOMMENTAR ZUM BGB (7th ed., Franz-Jürgen Säcker et al. eds., C.H. Beck 2015).

49. BGB § 903.

50. Franz Nieper & Hendrik Plöger, *Niederlande*, *in* 3 SACHENRECHT IN EUROPA, *supra* note 43, at 149, 162; *see* BURGERLIJK WETBOEK [BW] [CIVIL CODE] (established in 1992), as amended, Art. 3:2 (Neth.).

51. MICHAEL BRIDGE ET AL., THE LAW OF PERSONAL PROPERTY 1-11 (Sweet & Maxwell 2013); Andreas Rahmatian, *A Comparison of German Moveable Property Law and English Personal Property Law*, 3 J. COMP. L. 197, 202 (2008).

52. MATTHIAS LEHMANN, FINANZINSTRUMENTE: VOM WERTPAPIER- UND SACHENRECHT ZUM RECHT DER UNKÖRPERLICHEN VERMÖGENSGEGENSTÄNDE 240, 241 (Mohr Siebeck 2009).

is also allowed to exclude others from any exposure.[53]

1. Transparency: Publicity and Specificity

Since ownership is of exclusive nature, both its original and derivative acquisition requires some element of intersubjective perceptibility. To achieve universal recognition among legal entities it must be transparent to everybody concerned.[54] Within the civil law tradition, this principle of publicity usually becomes manifest for moveable goods in their possession and for real property in its public registry.[55] It is particularly important not only for the acquisition and transfer of ownership, but also for obtaining a lien or similar security interests.

However, there are significantly different publicity requirements throughout Europe.[56] While in Germany, for instance, chattel mortgage can be agreed upon quite confidentially, neither France nor England recognize non-possessory security interests without their explicit registration.[57] The second element of transparency is specificity, i.e., only definable things can be subject to ownership rights.[58] This is a common necessity among the European jurisdictions, which particularly rules out ownership of unspecifiable and aggregated assets.

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53. BLACK'S LAW DICTIONARY 563 (9th ed. 2009); BARRON'S LAW DICTIONARY 405 (6th ed. 2010).

54. SJEF VAN ERP & BRAM AKKERMANS, CASES, MATERIALS AND TEXT ON PROPERTY LAW 75 (Bloomsbury Publ'g 2012).

55. UGO MATTEI, BASIC PRINCIPLES OF PROPERTY LAW: A COMPARATIVE AND ECONOMIC INTRODUCTION 102–108 (Greenwood Publ'g Group 2000).

56. *See* Dewi J.Y. Hamwijk, *The puzzling concepts of publicity and possession: to the heart of property law*, 1 EUR. PROP. L. J. 299–316 (2012) drawing a line to the Draft Common Frame of References, which attempts to combine basic rules of the law of obligations which most European legal systems hold in common. *See* Study Group on a European Civil Code & Research Group on EC Private Law, *Principles, Definitions and Model Rules of European Private Law—Draft Common Frame of Reference (DCFR)* Book IX (Proprietary security rights in movable assets) (Outline ed., Sellier 2009) https://perma.cc/DB9D-ML9U.

57. Arts. 2338, 2072 C. CIV. (Fr.); BRIDGE ET AL., *supra* note 51, at 8–33; KATALIN LÉGRÁDI, MOBILIARSICHERHEITEN IN EUROPA 328 (Logos Verlag Berlin GmbH 2012); Rupp, *supra* note 37, at 95.

58. VAN ERP & AKKERMANS, *supra* note 54, at 76.

2. Acquisition of Ownership

In general, ownership can be constituted either by derivative or by original, i.e., legal acquisition.[59] Derivative acquisition means that the title of ownership is derived from a former owner; whereas, original acquisition implies a primary acquisition, in which case no previous owner existed. In this case, ownership is constituted by legal statute.

In comparison of European legal systems, both ways imply, in turn, various modes. First, ownership can be acquired derivatively by legal transaction, e.g., by contractual arrangement. Secondly, in certain cases and under strict conditions it may arise from legal acquirement, such as inheritance or specification. Thirdly, there is acquisition by sovereign acts like the award in a compulsory auction.[60]

3. Criteria for Allocation in Case of Original Acquisition of Ownership

Before ownership can be transferred derivatively, firstly, it must come into existence—the same applies to data ownership. From a comparative perspective, different criteria for allocation of ownership can be identified. With regard to data ownership, it is crucial to focus on the prerequisites of acquisition of ownership by specification, as an originator of data is comparable to the creator of a product in the broad sense.

Specification means a creator produces a new tangible thing out of one or more components and acquires its ownership. Basically, the creator is the person who carries out the specification directly.[61] This legal consequence shall take effect no matter who owned the manufactured components before, provided that the value of the new

59. *Id.* at 617.

60. *See* Gesetz über die Zwangsversteigerung und Zwangsverwaltung [ZVG] [Act on Enforced Auction and Receivership], Mar. 22, 1897, RGBL at 97, § 90 (Ger.).

61. Ernest G. Lorenzen, *Specification in the Civil Law*, 35 YALE L. J. 29, 38 (1925).

thing is not less valuable than the components.[62] Therefore, the moment the creator acquires ownership by specification, former rights expire.

In this context, the term "manufacturer" has to be understood in a broader sense, though. Its definition can depend on specific circumstances: not only the person who originally performs the transformation can be meant. In German Law, for example, the manufacturer—and as legal consequence the person who acquires ownership of the new thing—can also be the one in whose interest and in whose name the production is carried out (i.e., the person who is principal in the legal sense).[63]

This criterion for allocation is one of the older ones in the context of legal allocation of data. The idea of assigning data ownership to the person who induced the collection, storage, and processing of data economically and in context of his business, follows an economic approach. A similar approach can be found in the directive of the European Union on the protection of databases. By this directive, the maker of a database that shows there has been qualitatively, or quantitatively a substantial investment is provided an absolute right under copyright law.[64]

4. Transfer of Ownership

In comparison to the aforementioned aspects (i.e., publicity, specificity, and the acquisition of ownership), the European framework of national property laws shows major discrepancies regarding the transfer of ownership. Taking this fact into account, it is essential

62. Rahmatian, *supra* note 51, at 197, 235.

63. Peter Bassenge, *§ 950 margin no. 6*, *in* BÜRGERLICHES GESETZBUCH: BGB (76th ed., Otto Palandt ed., Verlag C.H. Beck 2016).

64. European Parliament and Council Directive 96/9, Mar. 11, 1996, on the legal protection of databeses, Art. 7 § 1, 1996 O.J. (L 77) 20, 25 (EC) [hereinafter Directive 96/9]; Commented on by Silke von Lewinski, *Database Directive*, *in* EUROPEAN COPYRIGHT LAW: A COMMENTARY no. 9.7.1 *et seq.* (Michael M. Walter & Silke von Lewinski eds., Oxford U. Press 2010); *see also* Estelle Derclaye, *The Database Directive*, *in* EU COPYRIGHT LAW: A COMMENTARY no. 9.31 *et seq.* (Irini Stamatoudi & Paul Torremans eds., Edward Elgar Publ'g 2014).

to give a brief overview of the various concepts of the transfer of ownership. On this occasion, we do not aim to outline a full explanation of each member states' property concept. We rather intend to explain the distinguishing characteristics with all due brevity, in order not to shift the focus of our topic. This approach should not be an end in itself. Our idea is to outline a legal framework for a European concept of data ownership. Therefore, it is necessary to examine the potential existing legal barriers and requirements of such concept in the concrete legal area.

A European concept of data ownership has to be implementable in the civil law systems of every member state. Thus, the authors have chosen to develop their proposition based on the principles of those jurisdictions that demand the strictest prerequisites when it comes to the original acquisition and transfer of physical property. The authors make the assumption that a concept compatible with those demands should work with the concepts of property law in all less restrictive member states as well.

For starters, it should be pointed out that "ownership is in the standard repertoire of all codifications in the European Union."[65] On this basis, two major tendencies can be identified.[66] Hereinafter, differences and commonalities shall be illustrated in an exemplary fashion.

a. Necessity of Delivery Combined with Contractual Agreement and/or Agreement in rem

Legal systems in Germany and Greece require a proprietary agreement—i.e., an agreement in rem (*dingliche Einigung*)—and physical transfer or substitute for physical delivery of the good, which shall be assigned (*traditio*).[67] In addition to the obligational

65. VON BAR, *supra* note 32, at 449.

66. VAN ERP & AKKERMANS, *supra* note 54, at 784; DIETER KRIMPHOVE, DAS EUROPÄISCHE SACHENRECHT 82 (EUL Verlag 2006) (applying a more sophisticated systematization of six models).

67. KRIMPHOVE, *supra* note 66 at 88 *et seq.*

contractual agreement that contains the minimum content of contractual conditions, e.g., performance and consideration (*essentialia negotii*), the parties have to conclude a bargain of disposition. With this agreement, normally fixed at the same time as the contractual agreement, the parties correspond in the transfer of property. A peculiar feature of German law is that both agreements, contractual, and in rem become effective and exist independently of one another (principle of separation). The invalidity of one contract does not affect the other (principle of abstract real conveyance). The publicity principle requires external recognizability of the change in the ownership structure, e.g., by transferring the direct possession of the determined thing. Thus, the fulfillment of the transfer of ownership should be apparent for third parties. With the necessity of delivery, this concept follows the tradition principle.

Compared with the rest of Europe, the German system of transfer of ownership is especially the one that raises very high barriers with regards to data ownership. The fact that both agreements exist independently complicates legal classification of possible ownership structures of data by enlarging the connecting factors. This is one reason why the discussion about data ownership is not in the least a German discussion.[68] From this knowledge, the following hypothesis is taken as a basis: if it is possible to establish a concept of data ownership that is compatible with those legal systems having demands concerning their legal principles that are difficult to combine with the nature of data, this concept, as well, might be adoptable to legal systems with less barriers in this regard.

In countries such as Austria, Hungary, Poland, or Switzerland, the transfer of ownership requires a proprietary agreement and the delivery of the assigned good as well, but it is based on the principle

68. *See* European Commission, *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, at 23 n.108, COM (2017) 9 final (Jan. 10, 2017) [hereinafter *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*].

of causa.[69] The principle of *causa* implies an inevitable link between the contractual agreement and the proprietary agreement. Notwithstanding the principle of separation, there is no effectiveness of the two agreements without one another. If for any reason the contractual agreement is ineffective, ownership is retransferred automatically.

Some countries—e.g., Spain and the Netherlands—do not require any proprietary agreement at all.[70] In this case, transfer of ownership is executed by the conclusion of a treaty (obligational agreement) and the delivery of the thing. Therefore, the transfer of ownership primarily depends on the question whether the obligational agreement is effective or not.[71]

b. Principle of Consensus

In France, Belgium, Luxemburg, Italy, Portugal, and Bulgaria there is a completely different approach to the transfer of ownership, as it is not based on any delivery but the principle of consensus. It only requires an effective understanding of the legal transaction.[72] Neither a further proprietary agreement nor the delivery of the sold good is necessary.[73] In case of an ineffective contract, the ownership is retransferred automatically to the former owner. It is noteworthy, that there is basically no element of public disclosure. Few exceptions only exist in the case of obligations to purchase of fungible

69. KRIMPHOVE, *supra* note 66, at 88 *et seq.*; for Austrian law, *see* VAN ERP & AKKERMANS, *supra* note 54, at 798.

70. KRIMPHOVE, *supra* note 66, at 103 *et seq.*; for Dutch law, *see* VAN ERP & AKKERMANS, *supra* note 54, at 795.

71. KRIMPHOVE, *supra* note 66, at 102.

72. Erwin Beysen, *Frankreich, in* 4 SACHENRECHT IN EUROPA, *supra* note 43, at 239; KRIMPHOVE, *supra* note 66, at 109.

73. Jakob Fortunat Stagl, *Der Eigentumsübergang beim Kauf von beweglichen Sachen - Gedanken über die Methode der Rechtsvereinheitlichung am Beispiel der Study Group on a European Civil Code, in* JAHRBUCH JUNGER ZIVILRECHTSWISSENSCHAFTLER 2004 at 369 (Andrea Tietze et al. eds., Richard Boorberg Verlag 2005); *see* Arts. 1583, 1138, 711 C. CIV. (Fr.).

goods, elective obligation or goods to be manufactured. Those exceptions require a further agreement appropriating the goods to the contract.

In contrast to this "pure principle of consensus"[74] or "solo consensus rule,"[75] the legal systems of Great Britain, the Czech Republic, and Lithuania combine both elements of the tradition principle and the principle of consensus.[76] In detail, the concrete procedure of selling tangible goods depends on the underlying legal transaction. All purchase agreements, as well as manufacturing agreements, fall under the Sale of Goods Act and the Consumer Rights Act. The only and sufficient condition for the transfer of ownership is the contractual agreement. According to ss. 17 (1) of the Sale of Goods Act "the property . . . is transferred to the buyer at such time as the parties to the contract intend it to be transferred." In this regard, the British system is comparable to the aforementioned model. However, it varies in the parties' possibility of determining the date of the transfer of ownership. Thereby, it enables temporal division of the conclusion of the contract and the acquisition of ownership. Outside the scope of the Sale of Goods Act—for example in case of donation, loan, or barter contracts—the general law of contract is applicable and the transfer of ownership additionally requires the delivery of the thing.

c. Non-Regulation in Scandinavia

There are a few European jurisdictions—particularly in Scandinavia[77]—that do not provide a uniform system for transferring ownership rights. In countries like Denmark, Norway, Sweden, Finland, and Iceland, only certain aspects are covered by existing law of

74. KRIMPHOVE, *supra* note 66, at 109 *et seq.*
75. VAN ERP & AKKERMANS, *supra* note 54, at 788.
76. KRIMPHOVE, *supra* note 66, at 120 *et seq.* ("differentiating principle of consensus").
77. *Id.* at 132 *et seq.* ("principle of consensus of successive single effect").

property. Those aspects indicate a similarity to the principle of consensus. However, by not regulating the system of transfer of ownership extensively, the legal systems are able to handle new developments more flexibly than other systems by adapting the law of property in one particular case.

5. Interim Findings

The analysis of European national property laws shows some major differences on the whole, but, nonetheless, commonalities within some crucial dogmatic legal issues. European law of property is, therefore, in principle, receptive to a joint approach regarding the question of data ownership.

IV. DATA-SPECIFIC ISSUES

So far, we have outlined the foundations of European property law and demonstrated that there is little legislation that particularly addresses data as an intangible asset. However, we have not paid close attention to the practical implications of this shortcoming, even though in praxis, the lack of data-specific regulation certainly raises quite a number of problems. We have picked some examples to draw further conclusions (i.e., data theft, bankruptcy, and whether data can be subject to a lien).

A. Data Theft

Whereas many national legal systems provide special sections for data theft,[78] the question whether the theft of data can be also classified as "usual" theft is of higher interest for the development

78. *See, e.g.*, STRAFGESETZBUCH [StGB] [PENAL CODE], § 202a, May 15, 1871, RGBL at 127, as amended (Ger.).

of a data ownership. Since most European member states' legislations determine that only a physical thing[79] can be stolen, it is extremely relevant whether or not the definition of things can also contain non-tangible assets.

Luxembourg's highest court in civil and criminal matters, the *Cour de cassation*, rendered an important decision in 2014 on the matter.[80] In the criminal case, the employee of a bank had downloaded and photocopied confidential documents that belonged to the bank. Later, he presented these documents before an employment tribunal as evidence for gross misconduct of his former employer. In response, the bank filed a criminal complaint inter alia for theft.

In the prior instance, the court of appeal[81] had differentiated between the downloading of electronic data and the photocopying of paper documents. For the aim of this article the violation of the bank's copyrights by the latter act are secondary, as well as the violation of professional secrecy.[82] As far as the downloading was concerned, the court held that the defendant did not commit the crime of theft, because an object of theft could only be an item of moveable corporeal property. According to the court of appeal, data could not be seen as a physical subject and, therefore, it could not be stolen.

Basically, the *Cour de cassation* followed the court of appeal's distinction but partly overruled its decision. It made use of a wider interpretation of the definition of theft: "[E]lectronic data stored on the bank's server and which is legally its exclusive property constitute incorporeal property which can be apprehended by way of downloading." Furthermore, according to the court, sec. 461 Luxembourg Criminal Code would not make a distinction between corporeal or incorporeal objects of theft.

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79. In French, a thing is "chose" and in German, it is "Sache."

80. Cour de cassation [Cass.] [Court of Cassation], Apr. 3, 2014, 6458/10/CD (Lux.).

81. Cour d'Appel [CA] [Court of Appeal], Luxembourg City, July 10, 2013, 395/13 X (Lux.).

82. Nevertheless, it is interesting to note that, according to the *Cour de cassation*, the photocopying qualifies as theft.

This means that electronic data stored on a server qualifies as a thing that can be stolen. By this decision, Luxemburg's *Cour de cassation* broke with the court of appeal's case law.[83]

B. Bankruptcy

As more and more data services shift from local or on-premises solutions to cloud-based setups, private individuals and corporate enterprises start to ask themselves, what would happen to "their" data if a cloud service provider went bankrupt? Once a cloud service provider shuts down its servers due to financial problems, customers can neither access nor recover their data. Despite the disastrous consequences, only few jurisdictions pay attention to this urgent problem so far. Again, the underlying problem seems to be that storage devices are easily sizeable as a "thing;" whereas, the data itself may be scattered across innumerous physical resources and, therefore, not tangible.

Usually, contracting parties have a right to claim for separation and recovery of assets not belonging to the bankrupt estate. However, this right of separation is closely linked to the above-mentioned principle of transparency, which requires an asset to be determinable. This means that customer data must be capable of being separated from other objects in order to be (re-)vindicated. In digital environments this obviously poses a problem. But thanks to virtualization, data clusters can actually be separated depending on the customers to whom they are assigned.

Against this background, most bankruptcy laws allow for a right to claim back. Unfortunately, some jurisdictions limit (re-)vindication to tangible goods, as does Switzerland for example.[84]

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83. CA, Luxembourg City, May 11, 2004, 154/04 V (Lux.).

84. Bundesgesetz über Schuldbetreibung und Konkurs [SchKG], Apr. 11, 1889, Art. 242.

Luxemburg, on the contrary, leads a different path. Just recently, it introduced a specific right to claim back intangible and non-fungible movable assets—i.e., data from bankrupt companies. For this purpose, article 567 of the Code of Commerce requires:

- that the bankrupt company must not be the legal owner of the data but only hold it,
- that the claimant must have entrusted the data to the bankrupt company or be the legal owner of it and
- that the data must be separable from the other assets of the company at the time of the opening of bankruptcy proceedings.[85]

Clearly, such a precise provision comes along with a great deal of legal certainty. Notwithstanding this advantage, most jurisdictions see no need for specific regulation as they allow for (re-)vindication of intangible assets under general provisions. In fact, this laissez-faire approach carries a certain risk, since it lacks data-specific prerequisites for claims.

C. Data and (Common Law) Lien

Closely related to the issue of how data is dealt with legally in case of bankruptcy is the question whether data can be subject to a lien. By extension, both subject areas discuss data as a possible economic security.

Within the boundaries of the Common Law, the English Court of Appeal assessed this exact question in a recent case in 2014.[86] For

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85. Nonofficial translation by Vincent Wellens, Patrice Vanderbeeken & Tycho de Graaf, *Proposal for a Right to Claim Back Data from Bankrupt Cloud Computing Providers*, LEXOLOGY, https://perma.cc/PEH7-KDKD; for further commentary on the provision, *see* Sjef van Erp, *Ownership of Digital Assets?*, 5 EUR. PROP. L. J. 73–76 (2016).

86. Your Response Ltd. v. Datateam Business Media Ltd. [2014] EWCA (Civ) 281 [2014], 3 WLR 887 (appeal taken from Eng.) [hereinafter Your Response Ltd. v. Datateam Business Media Ltd.]; commented on by van Erp, *supra* note 85, at 73–76; *see also* Thomas Hoeren, *Big Data and the Ownership in Data: Recent Developments in Europe*, 12 EUR. INTELL. PROP. REV. [EIPR] 751–754 (2014).

companies working with digital assets like customer data, the sudden loss of access to their data is likely to cause catastrophic results. Therefore, it is quite surprising that the legal matter has only just been decided by the courts. Current law in Britain states that a person who has possession of another person's property with the purpose of altering or improving the property can claim a possessory lien over that property in case of an unpaid debt. A well-known example is a car mechanic or a dry cleaner retaining possession of the client's goods. Incidentally, this legal mechanism applies to nearly every European legal framework.

In concreto, the legal matter in *Your Response Ltd. v. Datateam Business Media Ltd.*[87] questioned if it were possible to assert a common law possessory lien over a publisher of magazines' database containing subscriber's information now withheld by Datateam. The data was updated regularly; up to hundreds of alterations were made daily.

The Court of Appeal overruled the lower court and held that within the common law, a lien was only possible over tangible property; information stored in an electronic database could not be considered property that one can possess. Therefore, the court ruled that Datateam was not entitled to retain the data until outstanding invoices were paid.

Potent arguments by Datateam stressing the urgent need to extend the scope of lien were overruled. Judge Floyd emphasized the distinction between information itself, the physical medium, like a server for instance, and the rights to which the information gives rise, like intellectual property rights. One of the most relevant decisions the court based its verdict on is *OBG Ltd. v. Allan.*[88] This case rose, for the first time, the legal issue whether existing law should be applied to intangible objects. The trial court accepted an analogy

87. *See* Your Response Ltd. v. Datateam Business Media Ltd., *supra* note 86, at recital no. 83.

88. OBG Ltd. v. Allan [2007] UKHL 21, [2008] 1 AC 1, [2007] 2 WLR 920 (appeal taken from Eng.).

based on the presumption that the essence of possession is physical control combined with the intention to exclude others.

The Court of Appeal's decision highlights the fact that contractual status does not guarantee an appropriate degree of legal certainty in the long run. Further judicial or legislative action is still needed. Lord Justice Moore-Bick stated that it was a matter for Parliament to resolve. Contrarily, Lord Justice Davis argued that the court should resist the attraction to leave the common law lien stuck in its outdated origins, but to change it to suit a 21st century application, due to the unintended consequences that would follow such a verdict: for instance, changes within the law of theft. Interestingly, the court even states the rights and duties that arise in relation to data in a digitized business world.

Still, the judgement effectively limits modern data service companies, who are providing IT maintenance, to collect outstanding debt. They are then left in a remarkably less favorable position than traditional service providers like the aforementioned car manufacturer or dry cleaner. Therefore, the verdict not only obstructs start-up innovation, but also data-driven businesses. The court fails to provide sufficient argument for why putting IT service companies in a worse position is justified.

However, the nature of intellectual property itself needs to be taken in perspective also. Database rights follow the European database directive from 1996, which clearly states what rights are to be given to a database owner. A right of lien or any other similar right is not included.

V. DIMENSIONS OF DATA OWNERSHIP

As established above, we discovered a striking discrepancy between the economic and legal status quo in handling data as an asset.

As legal issues of data are increasingly considered in economic contexts, its value comes to the forefront.[89] Thus, considering that data is a de facto trade good, the lack of data-specific regulation is truly unsatisfactory. Against this background, we argue that the law should follow the economic reality and, therefore, address legal uncertainty.

In the following, we will further specify our property law approach by pointing out criteria for the assignment of data ownership and contouring dimensions of such an exclusive right in rem. As the debate on whether there is a fundamental need for data ownership is intensifying,[90] our approach takes up recent European impulses and attempts to contribute to a critical discussion by taking economic considerations as a basis.

A. European Scope

Before we proceed to substantiate the dimensions of a comprehensive data ownership concept, it is necessary to emphasize the crux of the problem of creating such a property right on a European scale. As outlined above, the member states have widely different models for acquisition, transfer, and scope of ownership rights.

At the lower end of the scale, we have the principle of consensus, which is applied in the legal systems of states such as France, Belgium, Italy, and Portugal, for example. This principle solely requires a contractual agreement that covers the details of data ownership and creates a sufficient legal framework. Thus, all performances are laid

89. This thesis is confirmed by the fact that, in the last years, the European Court of Justice had to judge data law issues in context of commercial or competition law increasingly often, *see, e.g.*, Case C-418/01, IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG, 2004 E.C.R. I-5039; Case T-201/04, Microsoft v. Commission, 2007 E.C.R. II-3601; Case C-170/13, Huawei Technologies Co. Ltd. v. ZTE Corp., ZTE Deutschland GmbH, 2015 ECLI: EU:*C*:2015:477.

90. For an overview of the current academic debate, *see Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 33 *et seq.*

down in one contract. The change of ownership, rights of use, access, and exploitation rights as well as defensive rights can be substantiated precisely. For that reason, according to the principle of consensus, the question of data ownership does not pose a major problem.

At the top end of the scale, we find the principle of abstract real conveyance combined with the principle of separation. It particularly applies to Germany and Greece. With the necessity of both an obligational contractual and proprietary agreement, these principles provide the highest level of requirements for assigning ownership rights. For this reason, the academic and governmental debate is much livelier in Germany than in other EU member states where the law of property follows the principle of consensus.[91]

Those are the systemic differences we already discussed. However, our analysis shall not be limited to identifying obstacles in drafting a European approach to data ownership. Instead, the aim is to find common ground. For this purpose, i.e., establishing a transnational data ownership right, one would consider a European regulation or directive as the obvious solution. The problem is that this is an unfeasible option because—according to the principle of conferred powers, one of the key EU principles[92]—the law of property is an exclusive matter of the member states.[93] Therefore, a purely theoretical concept requires finding the lowest common denominator within the various models of ownership in Europe. Hence, we

91. This thesis is substantiated by the recently published *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 22 *et seq.*, which reveals the current discussion about data ownership within the EU boundaries. Compared with the rest of Europe, data ownership issues have been discussed variously in academia and in government as well. No concrete regulatory initiatives have been launched so far.

92. According to the principle of conferral, the EU shall act only within the limits of the competences conferred upon it by the member states.

93. For a constitutional perspective on property law in the internal market, *see* Bram Akkermans, *European Union Constitutional Property Law: Searching for Foundations for the Allocation of Regulatory Competences*, *in* WHO DOES WHAT? ON THE ALLOCATION OF REGULATORY COMPETENCES IN EUROPEAN PRIVATE LAW 177–210 (Bram Akkermans et al. eds., Intersentia 2015).

opt for the following methodology: if we developed an approach that meets all requirements of the German and Greek legal system, *a fortiori* it would also work in all of the other legal systems. Against this background we hold on to the strictest, top-end requirements (as outlined above).

B. Potential Criteria for Assigning Data Ownership Rights

1. Open Data Concepts

One approach to deal with the legal classification of data is the use of open data concepts. Strictly speaking, open data does not facilitate the particular allocation of data to a legal subject, but rather has the opposite effect, by "setting data free."[94] Nonetheless, open data models are becoming increasingly popular amongst European governments and must, therefore, be taken into account.

France just recently passed specific open data regulations[95]: it is one of only a few European member states to have regulated on this issue. The idea is to "enhance the circulation of data and knowledge."[96] This places France in an improved competitive position, as it is facing the challenges presented by the advancing digital economy.[97] Under specific conditions, the new legislation requires commercial companies to provide access to data for purposes of re-utilization. This particularly concerns data acquired in the procurement process, commercial data for the creation of official statistics, data generated in the energy production and distribution process

94. Matt West, *Open Data: 3 Principles for Setting Data Free*, TREEHOUSE BLOG (Aug. 12, 2013), https://perma.cc/V3MC-YL7E; for visions of open data, *see* BRIDGETTE WESSELS ET AL., OPEN DATA AND THE KNOWLEDGE SOCIETY 45 *et seq.* (Amsterdam U. Press 2017).

95. Loi 2016-1321 du 7 oct. 2016 pour une République numérique [Law 2016-1321 of Oct. 7, 2016 on a Digital Republic], Journal Officiel de la République Française [J.O.] [Official Gazette of France], Oct. 8, 2016, no. 0235.

96. *Id.*

97. *See* the proposal of the law, Projet de loi pour une République mumérique, Assemblée nationale, no. 3318, Dec. 9, 2015, https://perma.cc/HEJ3-BDK9.

and, finally, data relating to changes in real estate ownership.[98] The Estonian government has gone even further by introducing the idea that the free movement of knowledge and data should be established as a fifth freedom, next to the four pre-existing internal market freedoms of the European Union.[99] Also, Finland has just recently commenced an open data initiative: the new Transport Code proposes that essential data—particularly passenger data—from all transport services shall be made open.[100]

Although open data concepts have beneficial effects,[101] due to the continued use of data within secondary economic business models, it complicates the explicit legal allocation of data or may even prevent it.

2. Data and Data Carriers

Another approach would be to focus on the medium storing the data, assuming that the data carrier itself constitutes data ownership. This assumption acknowledges the technological fact that digital data cannot be accessed without the physical medium.[102] Thus, a concept that understands data and its carrier as an entity is anything

98. *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 22 *et seq.*

99. The ideas were presented by the Estonian President Mr. Ilves, *see Debates*, EUROPEAN PARLIAMENT (Feb. 2, 2016), https://perma.cc/BR27-4KTT.

100. Finnish Ministry of Transport and Communications Press Release, *Transport Code Progresses, a Solution Found* (Sept. 21, 2016), https://perma.cc/UZH2-U4YC.

101. For further discussion, *see* OECD, *Data-Driven Innovation—Big Data for Growth and Well-Being* at 186 (2015), https://perma.cc/G6CV-BEVL; Gerrit Hornung & Thilo Goeble, *"Data Ownership" im vernetzten Automobil*, 31(4) COMPUTER UND RECHT [CR] 265, 272 (2015) (Ger.); *see also* the "free flow of data initiative" planned by the European Commission in the Communication from the Commission to the European Parliament, the European Economic and Social Committee and the Committee of the Regions, *A Digital Single Market Strategy for Europe*, at 4.1, COM (2015) 192 final (May 16, 2015).

102. *See* Bundesgerichtshof [BGH] [Federal Court of Justice] Jul. 10, 2015, NEUE JURISTISCHE WOCHENSCHRIFT [NJW] 317, 2016 (Ger.); Landesarbeitsgericht Chemnitz [LAG] [Higher Labour Court] Jan. 17, 2007, MMR 426 (2008) (Ger.).

but far-fetched. This approach facilitates the objectification of digital data and provides a tangible starting point for a right in rem. Legal reification of data can, therefore, be derived by using the data carrier as a point of reference for the legal allocation of data. At first glance, this approach would constitute a transparent and comprehensible solution. However, the economic value of data is not necessarily represented by the ownership of the data carrier. Eventually, regarding the current use of industrial data, the originator of data and the proprietor of the data carrier are rarely the same legal subject.[103]

3. Originator of Data

Perhaps the most significant approach regarding the discussion of data ownership as an asset focuses on the originator of data (scriptor).[104] In this context, the scriptor would be the person who directly initiates the data processing and is, therefore, closest to the matter.

In fact, this concept is one of the earliest and most sophisticated approaches. Its dogmatic rationale can be found within the German Criminal Law, for example. Sections 202a and 303a of the German Criminal Code protect the authority to dispose of data as a legal asset.[105] Therefore, we may draw the conclusion through analogy that

103. *E.g.*, cloud service providers such as Amazon Web Services provide data storage to customers. However, it is the customers who generate and process data.

104. Jürgen Welp, *Datenveränderung (§ 303a StGB)* Teil 1, INFORMATIK UND RECHT [IuR] 443, 447 (1988); Thomas Hoeren, *Dateneigentum – Versuch einer Anwendung von § 303a StGB im Zivilrecht*, MMR 486, 486 *et seq.* (2013); *see* Oberlandesgericht Nuremberg [OLG Nuremberg] [Higher Regional Court of Nuremberg], Jan. 23, 2013, 2013 ZD 282 (Ger).

105. DEUTSCHER BUNDESTAG: Drucksachen und Protokolle [BT] 16/3656, 9 (11) (Ger.); DEUTSCHER BUNDESTAG: Drucksachen und Protokolle [BT] 10/5058, 28 *et seq.* (Ger.); THEODOR LENCKNER, STGB-KOMMENTAR § 202a no. 1 (29th ed., Adolf Schönke & Horst Schröder eds. 2014); JÜRGEN-PETER GRAF, MÜNCHENER KOMMENTAR ZUM STGB § 202a no. 3 (3th ed., Wolfgang Joecks ed. 2017); Jan Eichelberger, *Sasser, Blaster, Phatbot & Co. - alles halb so schlimm? - Ein Überblick über die strafrechtliche Bewertung von Computerschädlingen*, MMR 594, 594 (2004); Monika Frommel, *Das Zweite Gesetz zur Bekämpfung der Wirtschaftskriminalität*, JURISTISCHE SCHULUNG [JuS] 667, 668 (1987).

data may also be subject to the power of disposition as a right in rem.[106]

At first instance, this train of thought allows for a comprehensible constitution of data ownership, due to the fact that this methodology is based upon objective criteria. Yet, such a rigorous approach shows one substantial weakness: it disregards the importance of the economical initiator of any modern data acquisition and data generating process. The initiator—as a rule—is not necessarily restricted to the originator of data.

Additionally, it is arguable whether an approach that—in essence—draws upon copyright law assumptions can be expedient with regard to modern data processing. We should question whether one can speak of a personal connection between the originator and his data—like the connection between an author and his work.

4. Economic Rationale

As stated above, the acceptance of data ownership is closely related to—if not fully dependent on—economic interests.[107] Huge investments are often necessary, to create, manage, and store data for operating purposes.[108] For example, sensors supervise the function of industrial plants and generate millions of data assets for fault diagnosis, maintenance, and automatic purposes.[109] It is by no means

106. *See* Herbert Zech, "*Industrie 4.0*" – *Rechtsrahmen für eine Datenwirtschaft im Digitalen Binnenmarkt*, GEWERBLICHER RECHTSSCHUTZ UND URHEBERRECHT [GRUR] 1151, 1159 (2015); Herbert Zech, *Information as a tradable commodity*, *in* EUROPEAN CONTRACT LAW AND THE DIGITAL SINGLE MARKET 51, 51–79 (Alberto de Franceschi ed., 2016) [hereinafter EUROPEAN CONTRACT LAW AND THE DIGITAL SINGLE MARKET]; Karl-Heinz Fezer, *Dateneigentum*, MMR 3, 4 (2017).

107. *See Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 34–35.

108. *See* Cindy LaChapelle, *The Cost of Data Storage and Management: Where is it Headed in 2016?*, DATA CENTER JOURNAL (March 10, 2016), https://perma.cc/LL5W-6C7X.

109. This trend is also known as Industry 4.0, *see* Cornelius Baur & Dominik Wee, *Manufacturing's Next Act*, MCKINSEY&COMPANY (June 2015), https://perma.cc/SN6A-JFKM. For a legal discussion on industrial data, *see* Andreas Wiebe, *A Protection of Industrial Data – A New Property Right for the Digital Economy?*, 65 GRUR INT. 877 (2016).

a matter of fact that the owner of the data carrier or the machine is necessarily identical with the subject who has original informational and economic interests.[110] Within the scope of contracting, data processing, leasing models or cloud computing, the client must be granted the predominant and legitimate interests in the exclusive access and use of data.[111] Third parties—including the contractor—shall be excluded from the opportunity to take note of the stored and processed data or the acceptance of property rights. Therefore, data ownership must take the contractual agreements and informational interests referring to the process of collection, recording, and organization into account.

Hereafter, a data ownership concept must be tied to the legal subject who primarily initiates the process of data recording and processing by economical, technical, and informational means.[112]

One potential criterion could also be allocated in the resources invested in the creation of the relevant data. This means taking factors like manpower or capital expenditure into account. In economic life, investments of this sort are mostly done by two different players. Firstly, the producer of the sensor-equipped device or tool that actually generates the data and, secondly, the economic operator that utilizes the device and has already funded the purchase price. His economic objective is the amortization of his investment.[113] Admittedly, this split situation does raise conceptual issues regarding the

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110. Herbert Zech, *Information as a Tradable Commodity*, *in* EUROPEAN CONTRACT LAW AND THE DIGITAL SINGLE MARKET, *supra* note 106, at 51, 75; Maximilian Becker, *Schutzrechte an Maschinendaten und die Schnittstelle zum Personendatenschutz*, *in* FESTSCHRIFT FÜR KARL-HEINZ FEZER ZUM 70. GEBURTSTAG 815, 825 (Wolfgang Büscher et al. eds. 2016).

111. *See Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 16 *et seq.*

112. For an overview referring general legal protection of data, *see* Todd Vare & Michael Mattioli, *Big Business, Big Government and Big Legal Questions*, 243 MANAGING INTELL. PROP. 46 (2014).

113. With this comprehensible explanation: *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 33 *et seq.*; with a reference to Herbert Zech, *Information as a Tradable Commodity*, *in* EUROPEAN CONTRACT LAW AND THE DIGITAL SINGLE, *supra* note 106, at 51, 75; Becker, *supra* note 110, at 815, 825.

identification of a specific data owner and is, therefore, too difficult to apply.[114]

5. Interim Findings

It is worth specifying at this point that the legal allocation of data to an owner in terms of property law has to be considered a work in progress. Still, several promising, coherent, and comprehensible approaches do exist already. Whichever is adopted, it must put informational, technological, and especially economical means at the center of any further consideration.

C. Rights of Use and Defensive Rights

Following a property law approach, we need to distinguish between two dimensions. As Section 903 of the German Civil Code states: "The owner of a thing may, to the extent that a statute or third-party rights do not conflict with this, deal with the thing at his discretion and exclude others from every influence." Similarly, article 5:1 of the Dutch Burgerlijk Wetboek specifies:

> (1) Ownership is the most extensive right, which a person can have in a corporeal object.
> (2) To the exclusion of everybody else, the owner is free to use the object provided that this use does not violate the rights of others and that it respects the limitations based upon statutory rules and rules of unwritten law.[115]

On the one hand, the owner of a thing is entitled to deal with his property at his discretion (positive rights of use). On the other hand, he may exclude others from any kind of interference (negative rights of defense). These two competences find their limits in the rights of third parties.

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114. European Commission, *High Level Conference on Building a Data Economy: Summary of the Discussion*, at *3* (Oct. 17, 2016), https://perma.cc/JSB8-SEXV.

115. Translation by VAN ERP & AKKERMANS, *supra* note 54, at 382.

Against this systematic background, we need to assess what kind of rights a data ownership could and/or should encompass. In order to assess this question, we will discuss both positive rights (i.e., data usage) and negative competences regarding secondary claims such as damages or restitution. In the following, we will illustrate potential outlines for such competences from a proprietary point of view.

1. Access Rights

First, we need to clarify whether or not data property is tied to exclusive or non-exclusive access rights. Exclusive data access would grant the data owner the right to exclude third parties from the opportunity to take notice of the stored information. In contrast to that, non-exclusive access would be required to balance the conflicting interests of the owner and third parties on a case-by-case basis. Such a need to balance interests on an individual basis cannot be considered a feasible solution regarding the practical significance of data-driven business models, particularly when taking into account the need for legal certainty. Therefore, ownership as a concept within the law of property necessitates that the data owner be granted the right of exclusive access.[116] However, this argument shall only apply insofar as legal provisions do not state otherwise, for instance if data protection law is applicable and third parties are not explicitly authorized to generate and access the personal data.[117]

Thus, a data owner generally has an exclusive right to access his data regardless of whether third parties process it on his informational, technological or economical behalf.[118] The owner's access right comes along with the third party's duty to tolerate and facilitate

116. *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 33 *et seq.*

117. Regarding the right of access within intellectual property law, *see* Dan Wielsch, *The Differentiation of Property*, 5 EUR. PROP. L. J. 77, 96 *et seq.* (2016).

118. *See* for instance in data protection law, GDPR Art. 15 § 1, which states that the data subject shall have the right to obtain, among further information, access to the personal data being processed. It is also provided by GDPR Art. 20 § 1, which gives the data subject the right to receive the personal data concerning him or her in a structured, commonly used and machine-readable format.

the enforcement of access claims. The access right shall be accompanied by the right to reproduce, i.e., copy identical datasets to ensure the access to data, considered as its informational basis.

2. Use and Exploitation

Secondly, we need to define the contours of a data owner's right to use and exploit data. From an economic perspective, it is fair to state that these competences are considered the most relevant since many business models are based on an extensive exploitation of data. After all, due to the lowering of switching costs, promotion of competition between data services,[119] and the exchange of economic goods, a great need for data portability (i.e., the movement, copying, or transfer)[120] can be concluded.

From a legal perspective, a specific portability right has already been established within data protection law. Article 20 of the GDPR states that one "shall have the right to receive the personal data concerning him, which he has provided to a controller, in a structured, commonly used and machine-readable format and have the right to transmit those data to another controller."[121] In this context, it is important to consider that the term "provide" covers a broad scope of applications[122] and nearly all kinds of data. This concept increases legal certainty substantially and indicates the general demand for data portability to be initiated on behalf of a data holder in case of a lack of comprehensive and fair contractual agreement.[123]

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119. Peter Swire & Yianni Lagos, *Why the Right to Data Portability Likely Reduces Consumer Welfare: Antitrust and Privacy Critique*, 72 MD. L. REV. 335, 338 (2013).

120. *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 46.

121. GDPR Art. 20 § 7.

122. Article 29 Data Protection Working Party, *Guidelines on the right to data portability, adopted on 13 December 2016*, 41(3) DATENSCHUTZ UND DATENSICHERHEIT [DuD] 136, 136 (2017).

123. *Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 47.

Economic exploitation of data raises yet another question: the fruits of the data—in another words, its economic benefit—need to be allocated to someone in a legal sense. Originally, the data owner should be entitled to profit from the outcome of processed information. For example, he should have the right of further analysis and processing. This dogmatic assumption is supported by existing national law in Europe[124] according to which fruits of a thing or rights are assigned to the respective owner and entitled legal persona.[125] Consequently, the owner of a smart car would be assigned the data and informational value he generates, unless statutory or contractual provisions state different assignations.

Finally, a data ownership should provide the legal option to transfer single competences to others.[126] If the owner withholds the original dataset but transmits identical copies to contract partners, particular exploitation rights might be granted. This means that single ownership rights can be licensed,[127] like the copying of data or transfer of informational and economic benefit. An exclusive property right on data, supplemented with licensing models, would facilitate the dealing with original and copied datasets and, therefore, strengthens data-driven business models as well as legal certainty in general.

3. Defensive Rights

The concept of data ownership furthermore grants a set of defensive rights to protect the right holder against impairment by third

124. *E.g.*, BGB §§ 953, 99.

125. Lambert Grosskopf, *Rechte an privat erhobenen Geo- und Telemetriedaten*, IP-RECHTSBERATER [IPRB] 259, 261 (2011).

126. BENEDIKT BUCHNER, INFORMATIONELLE SELBSTBESTIMMUNG IM PRIVATRECHT 276 *et seq.* (Mohr Siebeck 2006).

127. Parallels to this concept can be found in the Copyright Law, *see* Gesetz über Urheberrecht und verwandte Schutzrechte [Urhebergesetz] [UrhG] [Act on Copyright and Related Rights], Sept. 9, 1965, BGBL 1273, as amended, §§ 29, 31 [hereinafter Act on Copyright and Related Rights].

parties.[128] On a first level, a data ownership as a right in rem gives the data originator the right of disposal. The data owner, therefore, serves as legal point of reference regarding the integrity of data in terms of property law. This basically means that he is entitled to deal with the relevant data however he pleases as a right in rem.[129] Therefore, he shall be entitled to access and exploit or even delete the relevant data as explained above. On a second level, the integrity of data has to be proprietary against third parties. Eventually, the data originator needs protection against impairment and, therefore, entitlement to enforce legal action against unauthorized access and exploitation of his data. Thus, utilization of data by any outside party is prevented *erga omnes*, independent of contractual agreements.

Modification or destruction as an expression of compromising data integrity could be legally prohibited inter alia through tort law as a fully recognized right in rem.[130] Still, such protection would not include copying or the mere use of data, since such activity would lead to an unintended monopolization of data.[131]

Specifically, legal protection could be integrated within civil procedural law as, for instance, the right to seek injunctions in order to prevent further exploitation, the right to have products built and

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128. Herbert Zech, *Information as a Tradable Commodity*, *in* EUROPEAN CONTRACT LAW AND THE DIGITAL SINGLE, *supra* note 106, at 51, 51–79; Becker, *supra* note 110, at 815; Kerber, *supra* note 3, at 989, 989 *et seq.*

129. *See* on the "most comprehensive" nature of the right of ownership, VAN ERP & AKKERMANS, *supra* note 54, at 219 *et seq.*; for further German Commentary on § 903 BGB, *see* OTHMAR JAUERNIG, KOMMENTAR ZUM BGB §903 no. 2 *et seq.* (16th ed., Othmar Jauernig ed. 2015); BETTINA BRÜCKNER, MÜNCHENER KOMMENTAR ZUM BGB § 903 no. 22 *et seq.* (7th ed., Franz Jürgen Säcker et al. eds. 2015); HANS SCHULTE-NÖLKE, BÜRGERLICHES GESETZBUCH: BGB § 903 no. 1 *et seq.* (8th ed., Reiner Schulze et al. eds. 2014).

130. Wolfgang Kerber, *Governance of Data: Exclusive Property vs. Access*, 47(7) INT'L. REV. INTELL. PROP. & COMPETITION L. [IIC] 759, 760 (2016); Wiebe, *supra* note 109, at 877, 880 *et seq.* In German tort law such a legal classification is already recognised on a broad scale, *see* Michael Bartsch, *Daten als Rechtsgut nach § 823 Absatz 1 BGB*, *in* RECHT DER DATEN UND DATENBANKEN IM UNTERNEHMEN 297, 300 (Isabell Conrad et al. eds., Dr. Otto Schmidt 2014); Bundesgerichtshof [BGH] [Federal Court of Justice] July 2, 1996, 133 BGHZ 15 (Ger.).

131. *See* Wiebe, *supra* note 109, at 877, 880 (pointing out further problems in U.S. law).

services offered on basis of misused data excluded from commercialization, and the right to claim compensation for damages for unauthorized use of data.[132]

At this juncture, we already need to point out the potential for conflict regarding personal data, as the protection of personal data is secured by article 8 of the European Charter of Fundamental Rights and, therefore, subject to legislative and judicial control.

Additionally, data protection law foresees claims for damages itself if data is misused.[133] Yet, these can only be asserted as far as personal data is concerned. The distinction between personal and non-personal data is unclear though, since in the era of big data, anonymous data can often be de-anonymized easily. Admittedly, potential economic risks arise in terms of a data ownership concept regarding claims for damages of the data subject that may hinder the usability and marketability of the respective data.

However, it is very unclear how the amount of damage should be calculated. A reference point can be derived from the GDPR that contains rules on sanctions and damages. While the latter does not give any hint on the actual amount of damages, the first foresees up to 4% of the total worldwide annual turnover or 20 million Euros. One has to keep in mind though that these numbers serve as a reference point in case privacy is violated, but cannot be used as far as industrial data is concerned—since data protection law protects other legal assets than mere economic interests. In this respect, one might refer to the calculation of damages in copyright law, where the amount of damage can be calculated on the basis of what should have been paid if the permission would have been lawfully requested.[134]

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132. For further information, *see Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 33.

133. *E.g.*, GDPR Art. 82.

134. *See* Act on Copyright and Related Rights, *supra* note 127, at § 97 sec. 2; explained by PAUL GOLDSTEIN & P. BERNT HUGENHOLTZ, INTERNATIONAL COPYRIGHT—PRINCIPALES, LAW, AND PRACTICE 325 *et seq.* (Oxford Press U. 2013); *see also* Thomas Dreier, *Damages for Copyright Infringement in Germany*,

In contrast to a data ownership consisting of positive and negative competences, another approach proposes that the data originator could be given purely defensive rights,[135] therefore promoting a "data possession" instead of a "data ownership."[136] Nonetheless, granting the data originator defensive rights in terms of property law should be limited to a certain extent, in order to prevent data monopolies.

It can be summarized, that defensive rights are an indispensable part of a data ownership. This argument is supported by legal considerations derived from moral rights within copyright law, which give the author inter alia the right to prohibit the distortion or any other derogatory treatment of his work, which is capable of prejudicing his legitimate intellectual or personal interest in the work. In this context, the work is already seen as being distorted when its independent character changes negatively.[137] This is due to the author's special relation to his work. Transferring this legal provision to the question at hand, one could argue that the data owner should be able to prohibit any distortion of the integrity of his data by third parties—since this data might hold information about him that he does not want to be distorted. Taking into account that our data ownership approach is based upon assumptions drawn from property law, issues regarding the scope of application of moral rights within

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in INTELLECTUAL PROPOERTY AND INFORMATION LAW—ESSAY IN HONOUR OF HERMAN COHEN JEHORAM 129, 131 (Gerald Mom ed., Kluwer Law Int'l 1998).

135. Kerber, *supra* note 3, at 989, 991.

136. Herbert Zech, *Information as a Tradable Commodity*, *in* EUROPEAN CONTRACT LAW AND THE DIGITAL SINGLE, *supra* note 106, at 51, 63; for more details, *see Commission Staff Working Document on the Free Flow of Data and Emerging Issues of the European Data Economy*, *supra* note 68, at 33 *et seq.*

137. Emphasised for several national European copyright laws by GOLDSTEIN & HUGENHOLTZ, *supra* note 134, at 19 *et seq.*; for further German commentary, *see* GERNOT SCHULZE, URHEBERRECHTSGESETZ: URHG § 14 no. 5 *et seq.* (5th ed., Thomas Dreier & Gernot Schulze eds. 2015); ANDREAS WIEBE, RECHT DER ELEKTRONISCHEN MEDIEN § 14 no. 4 *et seq.* (3d ed., Gerald Spindler & Fabian Schuster eds., Beck 2015); WINFRIED BULINGER, PRAXISKOMMENTAR ZUM URHEBERRECHT: URHR § 14 no. 4 *et seq.* (4th ed., Artur-Axel Wandtke & Winfried Bullinger eds., Beck 2014); *see* for a conceptual expansion of property regarding intellectual property law, Wielsch, *supra* note 117, at 77, 87 *et seq.*

137. GDPR Art. 2 § 1, Art. 6 § 1.

European copyright law are not addressed at this point, but may raise further questions in the future. As can be seen, the specific embedment of defensive rights regarding data ownership as a legal concept within civil law is still a work in progress.

D. Conflicting Rights

The acceptance of exclusive rights regarding data potentially conflicts with rights of third parties or the law system itself. Personal data, which is information about an individual, is deeply knotted to the data subject. In Europe, the accessibility to and use of these data assets is tied to the explicit consent or an exceptional authorization by law, if they are generated automatically or either-way intended to form part of a filing system.[138] Therefore, an ownership of personal data is usually determined by the data protection framework.[139] Data processing has to be compatible with a legitimate purpose of the controller, for instance the performance of a contract.[140] The processing of special categories of personal data—e.g., racial or ethnic origin—is moreover generally prohibited, until particular interests of third parties come up.[141] In addition, the individual has extensive rights, which limit the processing of the collected information, such as the possibility to withdraw the recent consent, right to access, rectification, erasure, and restriction.[142] In this regard, data ownership can certainly be allocated to the data subject.[143] On the contrary, the controller has only limited exclusive rights in terms of the collection, use and transmission of personal data. In order to

138. *Id.*
139. However, the GDPR does not apply to the processing of personal data by a natural person in the course of a purely personal or household activity, *see* GDPR Art. 2 § 2.
140. GDPR Art. 5 § 1(b), Art. 6 § 1(a).
141. GDPR Art. 9.
142. GDPR Art. 7 § 3, Arts. 15–18.
143. Nadezhda Purtova, *The Illusion of Personal Data as no One's Property*, 7 L. INNOVATION & TECH. 83 (2015); *see also* Marc A. Rodwin, *Patient Data: Property, Privacy & the Public Interest*, 36 AM. J. L. & MED. 586, 593 (2010).

ensure legal certainty, the controller should obtain the clear and extensive consent of the subject for data processing. To avoid these strict provisions of the European GDPR, one can introduce procedures to anonymize data assets; for example by removing personal identifiers.[144]

Another question that arises concerning property rights on data is the potential conflict with the ownership of the data carrier. Since data can easily be copied, modified, and transferred to other storages, the entitlement to use and access the storage and data may diverge. A contractual agreement with a cloud operator usually does not mean that the operator receives legal ownership on the stored data assets. Instead, the user merely intends temporary retention and requests for exclusive access to the information. In this context, the agreement of the parties has to be cultivated.

Furthermore, confidentiality interests limit the use and disclosure of data. If third parties have overriding socio-economic motives regarding the secrecy of data, the exploitation and transmission of these assets can be characterized as lacking good faith and are possibly punishable.[145]

Beyond that, competition and antitrust law provide boundaries for the compilation of big data and data itself. Dominant positions within the internal market or in a substantial part of it is prohibited according to article 102 TFEU. It is reasonable to question whether or not companies like Facebook, which massively collect personal data, exploit their dominant positions and, therefore, should be restricted.[146]

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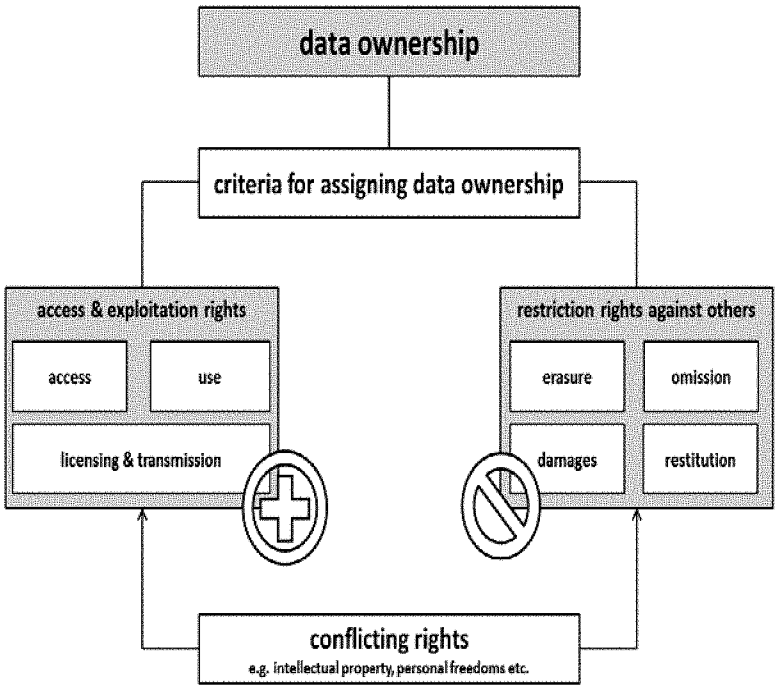
144. GDPR Art. 2 § 1. For further information on the GDPR and the former European Data Protecion Directive, *see* Arlette Noujaim, *The Stimulus for Data Protection Law Around the World: The Development and Anticipated Effect of the European Union's New Data Rules*, 20 INTELL. PROP. L. BULL. 99, 102–113 (2015–2016).

145. *See* Gesetz gegen den unlauteren Wettbewerb [UWG] [Act against Unfair Competition], July 3, 2004, BGBL I 233, as amended, § 17.

146. Sebastian Telle, *Big Data und Kartellrecht*, 3 INTER 3, 5 (2017); *see* Autorité de la concurrence & Bundeskartellamt, *Competition Law and Data* (May 10, 2016), https://perma.cc/D9LY-UPR9.



Finally, European databases are protected "by reason of the selection or arrangement of their contents . . . [if] they constitute the author's own intellectual creation."[147] Furthermore, a sui generis right determines the protection "for the maker of a database, which shows that there has been qualitatively, and/or quantitatively a substantial investment in either the obtaining, verification or presentation of the contents."[148] These matters have to be respected in regard to the acceptance and limit of data ownership.[149]

147. Directive 96/9, *supra* note 64, at Art. 3 § 1.
148. *Id.* at Art. 7 § 1.
149. For an overview of how intellectual property law influences the disclosure of data, *see* Michael Mattioli, *Disclosing Big Data*, 99 MINN. L. REV. 535, 549–556 (2014-2015).

VI. FINAL CONCLUSIONS

Our analysis shows that the European framework of supranational and national laws provides a sufficient basis for a property law approach to data ownership. By taking the variety of European legal systems and their different models for acquiring and transferring ownership rights into account, our course of action proposes an *argumentum a fortiori* and follows a three-step approach. In the first place, it is crucial to specify how data as an asset can be allocated to a legal subject. We argue that potential criteria must consider informational, technological, and economical means. Secondly, we need to outline the contours of an exclusive data ownership right. From a property law angle, it grants both positive competences (rights of access, use, and licensing) and negative rights of defense (claims for damages and restitution). However, it is essential to stress that a data ownership cannot exist without limitations—despite its absolute nature. Hence, and thirdly, those restrictions necessitate balancing data ownership with conflicting rights and interests such as intellectual property, confidentiality, or personal freedoms. These limitations facilitate an adequate level of protection for specific categories of data requiring protection from unlimited exploitation: privacy and data protection in particular.

Our property law approach attempts to contribute to the debate on data ownership by pointing out that the economic reality—i.e., data being traded as an asset—can hardly be denied. However, this approach poses more of basic considerations than an actual concept since property laws are subject to national legislation. Still, in the light of national fragmentation, it became obvious that European jurisdictions need a strong commitment to seek common ground in order to ensure legal certainty and economic prosperity.