PARADIGMS OF INTERNET REGULATION IN THE EUROPEAN UNION AND CHINA

DATA REGULATION IN THE INTERNET OF THINGS

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Abstract  The reflections on data regulation in the internet of things (IoT) in this paper provide an overview of the different conceptions and legal problems of “data property rights.” Beginning with an overview of the existing and possible applications of the future IoT (in particular, smart cars), this paper describes the legal concerns that may arise because of increased commercialization of object-generated data. The author uses German and European Union law to illustrate the legal complexities, solutions, and shortcomings. He demonstrates how and to what extent these issues are covered by traditional data protection regulations and highlights the conceptual blind spots of these regulations. He then contrasts the data protection paradigm (de lege lata) with the idea of a general erga omnes data property right (de lege ferenda) and describes the most common understanding of such a right, that is, a data producers’ property right. Against the background of the possible economic advantages of general data property rights, the paper discusses conceptual problems and constitutional concerns. In conclusion, the author rejects the idea of a general data property right.

Keywords  data protection law, data property, internet of things (IOT), smart cars

INTRODUCTION

INTRODUCTION

When Google’s chairman and ex-CEO Eric Schmidt was asked about the future of the
internet during a panel at the 2015 World Economic Forum in Davos, Switzerland, his response was as follows:

I will answer very simply that the internet will disappear. There will be so many IP addresses...so many devices, sensors, things that you are wearing, things that you are interacting with that you won’t even sense it. It will be part of your presence all the time. Imagine you walk into a room, and the room is dynamic. And with your permission and all of that, you are interacting with the things going on in the room. A highly personalized, highly interactive, and very, very interesting world emerges.¹

The idea of the internet disappearing and merging with the reality surrounding us still seems more like a dream of the future. Nevertheless, it is obvious even today that the internet is no longer about people sending each other emails or sharing pictures, videos, and opinions through social media networks. In 2017, an estimated 8 billion objects had a direct internet connection; this number is set to increase to roughly 20 billion in 2020.² In consideration of the fact that “only” 3.5 billion people were online in 2017,³ this statistic is strikingly significant. Coffee machines and toasters, washing machines and refrigerators, air-conditioners and baby phones can all be connected to the internet and are turning our houses and apartments into “smart homes.” City planners are developing waste management concepts based on smart garbage cans that communicate their volume level to garbage trucks. Even our cars are already sending real-time data concerning, for example, the operation of the vehicle, the functioning of its technical components, and road conditions to manufacturers, internet service providers, and other stakeholders.

The spreading of internet-ready devices and sensors — I will refer to them as “smart” objects or devices — comes with an explosion of data traffic. This information is of considerable interest to many market players, as they can extract value from these data by improving smart products, and by creating new applications, and of course use this information to tailor advertising to the particular needs and preferences of the owners and users of the smart devices. In short, the internet of everything brings about the commercialization of everything.

The flow of data traffic has the potential to be the source of numerous legal issues in the context of the internet of things (IoT) — IT security and product security, for example, or access rights for police authorities. In this paper, I will focus on one specific aspect: Who has or should have (and who has not or should not have) an erga omnes right to use the vast amounts of data produced by the IoT and to extract economic value from these

data. In the following passages, I will refer to this aspect as the issue of data regulation, and I will discuss two of the possible approaches (or paradigms) of data regulation: data protection and data property. While the challenges related to data regulation are universal, I will use German and European Union law to illustrate the legal complexities, solutions, and shortcomings.4

I. STAKEHOLDERS AND INTERESTS

The primary stakeholders are, of course, the owners and users of the smart objects. To keep it simple, we will assume that the owner and the user are one person.5 Using this assumption as a foundation, we can pose questions such as what kind of (legal or illegal) data-related interests does the owner and user of a smart car have?6

First, the data generated by the car may contain information on the driver’s behavior and location in certain situations. This information could allow conclusions to be drawn as to whether the person behind the wheel is generally a careful or a risky driver, or whether the car was present at a crime scene. In light of the sensitivity of this information, it is self-evident that the driver of the connected car has a vital interest in the use of this information being restricted.

Second, the owner certainly has a legitimate interest in extracting value from the data concerning the functioning of the technical components of the car and its environments, such as road, weather, and traffic conditions. To collect and transmit these data, the car needs to be operated, which means that someone has to drive the vehicle and pay for gas.

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4 Information on the general legal context of German and European Internet regulation can be found in the introduction to this volume. If necessary, specific features of German and European law will be pointed out separately in this text.

5 It should be noted that ownership of smart objects must not necessarily follow regular ownership patterns of “non-smart objects.” As the data may be one of the key value components of smart products, the manufacturers could reserve ownership of the products. However, even if the ownership of the physical objects is clear, this does not (necessarily) address the ownership of the data (see below in III. B.).

6 Most German authors discussing issues of data property focus on the example of smart cars (or connected cars). For example, see Alexander Rollnagel, Fahrzeugdaten – wer darf über sie entscheiden? Zuordnungen – Ansprüche – Haftung (Vehicle Data — Who May Decide on Them? Classification — Claims — Liability), SVR, 281, 282 (2014); Gerrit Hornung & Thilo Goebel, “Data Ownership” im vernetzten Automobil – Die rechtliche Analyse des wirtschaftlichen Wertes von Automobildaten und ihr Beitrag zum besseren Verständnis der Informationsordnung (“Data Ownership” in the Networked Automobile — The Legal Analysis of the Economic Value of Automobile Data and Its Contribution to a Better Understanding of the Information Order), 30 Computer und Recht (Computers and Law), 4, 265 (2015). According to Philipp Denker, Dirk Graudenz & Laura Schiff et al., “Eigentumsordnung” für Mobilitätsdaten? Eine Studie aus technischer, ökonomischer und rechtlicher Perspektive (“Property Code” for Mobility Data? A Study from a Technical, Economic and Legal Perspective), Bundesministerium für Verkehr und digitale Infrastruktur (Berlin) (Federal Ministry of Transport and Digital Infrastructure (Berlin)), at 3 (2017), the average value of a single car’s data per year amounts to €350. Considering that there are around 45 million vehicles on German roads, this would mean that the German car data market alone has a volume of more than €15 billion per year.
Consequently, it seems only fair that the owner, who usually bears these costs, is entitled to “sell” the operating data.

The manufacturers of smart objects are also important stakeholders in the IoT. Primarily, they will be interested in data directly linked to the objects. For car manufacturers, for example, data concerning the long-term performance of car components, as well as the characteristics of their average customers, will be of great importance when it comes to substantial product enhancements. Moreover, some of the information that could be derived from these data may amount to trade secrets, which is obviously a legitimate interest of manufacturers. Finally, the manufacturers could be interested in developing entirely new functions and products to complement the car, or at least in selling the data to third parties who may develop such complementary products or use the data otherwise.

Apart from the owners, users, and manufacturers of smart objects, numerous third parties can be stakeholders in the IoT. Again, the data generated by connected cars can serve as an example.

Mapping service providers depend on fresh real-time data on the road and traffic conditions including information on slippery roads, potholes, bumps on the roads, accidents, traffic jams, and roadworks. Not entirely coincidentally, Tencent — one of the largest Chinese internet companies — recently announced that it would join the German car manufacturers Daimler, BMW, and Audi as a shareholder of HERE, a company providing mapping data and related services. Companies like HERE have a significant interest in data related to the car environment.

Other companies might have an interest in information related to the users’ driving behavior and skills. They could evaluate these data for advertising purposes, but also with regard to matters of insurance.

Finally, governmental authorities also have an interest in car-generated data. The Dutch police, for example, bought raw data from navigation service provider TomTom to find out which roads and spots are best suited for speed controls. Moreover, particularly in urban areas, real-time data from cars can be highly valuable for public traffic management.

With this agglomeration of diverging interests at stake, conflicts between stakeholders due to the use of data generated by smart devices seem inevitable. On the one hand, car owners will probably be unhappy if the manufacturers sell information on their driving abilities to their insurance companies, or raw data for the possible location of speed

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7 Id. at 265, 268, note 35 (2015).
controls to local police units. They might also want a share of the earnings that manufacturers receive by selling the data to third companies — such as mapping service providers — for profit. On the other hand, manufacturers would probably dislike it if car owners granted third parties access to car-generated data against remuneration.

Before turning to the two major approaches of data regulation, we should clarify the relevance of regulatory interference, particularly the relevance of an *erga omnes* right of a person to decide on the use of their data. In principle, data regulation will define the starting point of a bargaining process between stakeholders — nothing more and nothing less. If there is a legal rule that the use of information related to a natural person should not be given to anyone without the consent of the subject of that information, everyone interested in the information will try to “buy” that consent or obtain it when closing a sales or service contract with the data subject.

Of course, this is an issue primarily governed by contract law, not by constitutional law. However, in the German legal system, constitutional law is applicable if we ask whether the rules of contract law provide a sufficient regulatory framework for this kind of bargaining. Constitutional law requires that there is a level playing field for different stakeholders. By choosing the starting point of the bargaining, by ensuring that the bargaining process is transparent, and by configuring certain legal limitations to its possible outcome, the legislator carries out its constitutional obligation to protect the rights and legal interests of the stakeholders. Because of their complexity, this paper cannot address all these issues in detail; it will instead focus on the two major paradigms of data regulation: data protection and data property.

II. THE TRADITIONAL APPROACH: DATA PROTECTION

For a long time, the predominant paradigm of data regulation (and one of the most important paradigms of European internet regulation as a whole) has been data protection.9 The German and European data protection legislation clearly states that, in

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9 Besides data protection law, there are several other regimes that might provide solutions for certain problems raised by the increasing economic use of data produced in the internet of things, in particular: (1) the specific rules on the protection of trade secrets according to Directive 2016/943 of June 8, 2016, on the protection of undisclosed know-how and business information (trade secrets) against their unlawful acquisition, use, and disclosure; (2) the *sui generis* database right as set out in the European Directive 96/9/EC of March 11, 1996 on the legal protection of databases; (3) general copyright law as well as certain rules of general; (4) tort law; (5) competition law; and (6) criminal law. As these regimes do not cover all aspects of the economic use of object data, and for reasons of simplification, the focus of this paper will remain on data protection law as the most specific set of rules concerned with “data regulation.” Other regimes are discussed more thoroughly, for example, by Herbert Zech, “*Industrie 4.0*” — *Rechtsrahmen für eine Datenwirtschaft im digitalen Binnenmarkt* (“Industry 4.0” — Legal Framework for a Data Economy in the Digital Internal Market), 117 Gewerblicher Rechtsschutz und Urheberrecht (GRUR) (Intellectual Property and Copyright Law), 1155–1159 (2015); with regard to European Union law cf. Commission Staff Working Document on the free flow of data and emerging issues of the European data economy accompanying the document “Communication Building a European data economy,” SWD (2017) 2 final, 19–22.
principle, the processing of personal data is lawful only if and to the extent that the subject of the personal data has given consent to the processing of their personal data for one or more specific purposes, Article 6(1)(a) of the General Data Protection Regulation (GDPR).10

What exactly does this entail, for example, with respect to connected cars? If the manufacturers intend to use personal data generated in a smart car (by analyzing them or by selling them to third parties), they need to either have obtained the owner’s consent or anonymized the information (to eliminate the possibility of it being traced back to the owner of the car).

One of the major constitutional foundations of data protection law is the right to informational self-determination. This right was developed by the German Federal Constitutional Court in 1982, in its landmark decision on the German Census Act. The Court held that, to be able to develop as a self-determined member of a liberal, democratic community in the information age, every individual has the right to decide on the disclosure and processing of any of their personal data, as an emanation of the general right to personality pursuant to Articles 2(1) and 1(1) of the German Basic Law. Free citizens need to know “who knows what, when, and on what occasion about them.”11 This illustrates that the main objective of this protection law is to protect the personal data of the individual.

This is an important consideration because it reveals a major conceptual limitation of the data protection paradigm. Data protection law covers only information related to a natural person. In contrast, data protection law does not cover non-personal information, such as personal information that has been anonymized. Consequently, a large amount of the information generated in a connected car with substantial economic value will not be subject to the rules of data protection laws, if and to the extent that the information is anonymized. Furthermore, the data protection law is concerned only with the limitation of the processing of (personal) data; it is not, however, designed to allocate the economic benefits of its processing and to ensure that the data subject is adequately remunerated for permitting the commercial use of their data.12

This demonstrates that the data protection paradigm does not address all issues that


12 The right to informational self-determination could be developed further as the constitutional foundation of a property right specifically with regard to personal information (de lege ferenda). For such a property right conception of informational self-determination, see Benedikt Buchner, Informationelle Selbstbestimmung im Privatrecht (Informational Self-Determination in Private Law), Mohr Siebeck (Tübingen), at 208–221 (2006).
may be raised in the context of data regulation, particularly concerning the economic use of non-personal, machine-generated data.\footnote{It is worth noting that, in addition to data protection laws, consumer interests are protected through various other laws and regulations against a misuse of data that might be generated by smart objects. Insurance companies, for example, are not entirely free in their risk calculations as they are bound by the applicable insurance legislation and general consumer protection law. Cf. Hans Peter Bull, \textit{Sinn und Unsinn des Datenschutzes (Sense and Nonsense of Data Protection)}, Mohr Siebeck (Tübingen), at 43–44 (2015).}

\section*{III. The New Approach: Data Property}

Against this background, German legal scholars have recently attempted to develop another paradigm of data regulation that could cover these aspects,\footnote{The most frequently cited scholarly writing on data property — and so far the most sophisticated one — has been published by Herbert Zech, \textit{Daten als Wirtschaftsgut – Überlegungen zu einem “Recht des Datenerzeugers” (Data as an Economic Good — Considerations on the “Rights of the Data Producer”), 31 Computer und Recht (Computers and Law), 3, 137 (2015); Herbert Zech, \textit{Data as a Tradable Commodity}, in Alberto De Franceschi ed. \textit{European Contract Law and the Digital Single Market}, Intersentia (Cambridge), at 59–60 (2016).} and the European Commission assimilated these developments in its communication on “Building a European Date Economy” in early 2017,\footnote{\textit{Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on “Building a European Data Economy,”} COM (2017) 9 final; \textit{Commission Staff Working Document on the free flow of data and emerging issues of the European data economy accompanying the document “Communication Building a European Data Economy,”} SWD (2017) 2 final.} the paradigm of data property. Today, the debate on data property is certainly a discussion on possible regulation \textit{de lege ferenda} (and not \textit{de lege lata}). This means that under the currently applicable legal framework in Germany and Europe, there is no such thing as a general exclusive data property right.\footnote{For example see Michael Dorner, \textit{Big Data und “Dateneigentum” – Grundfragen des modernen Daten- und Informationshandels (Big Data and “Data Ownership” — Basic Questions of Modern Data and Information Trading), 31 Computer und Recht (Computers and Law), 9, 617, 622 (2014). The only author arguing that the existing legal framework provides for a certain level of protection of data rights in general is Thomas Hoeren, \textit{Dateneigentum – Versuch einer Anwendung von § 303a StGB im Zivilrecht (Data Ownership — Attempt to Apply § 303a StGB in Civil Law),} 12 MultiMedia und Recht (Multimedia and Law), 8, 481 (2013).} However, European national governments are considering options to create such exclusive data property rights through national or European legislation.\footnote{In a speech given in 2015, for example, then EU Commissioner Oettinger stated, “we need a virtual and digital law of property that includes data,” as reported by Wolfgang Kerber, \textit{Governance of Data: Exclusive Property v. Access, 47 International Review of Intellectual Property and Competition Law, 7, 759 (2017).}} In this part, the introduction of general data property rights shall be discussed from the perspective of German constitutional law.

\subsection*{A. What Would “Data Property” Mean and Why Might We Need It?}

To fully comprehend and evaluate the concept of data property, it is important to
understand the precise subject matter of a proposed data property right. If we compare possible data property rights to personal data as covered by data protection law, data property would refer to a different level of information.\(^\text{18}\)

The protection of personal data requires that the information be related to a person and hence concerns the meaning of that information. It is related to information in a semantic sense, and it does not matter whether the personal information is encoded as text on a piece of paper or as machine-readable data on a computer chip.\(^\text{19}\)

In contrast, data property is supposed to relate to a lower level of information.\(^\text{20}\) Just like any other intellectual property right, data property would relate to syntactic information — that is, to the coding information — and therefore it would cover all machine-readable data generated by smart devices, irrespective of their meaning and content. The economic value of all these data would be attributed to the person producing the data (or is otherwise responsible for the data) as a data property right.

According to the taxonomy of information proposed by Herbert Zech, personal information (as protected, de lege lata, by data protection law) and object data (as protected, de lege ferenda, by data property rights) can be attributed to the different levels (or categories) of information as follows (see Table 1):

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Different Levels of Information</th>
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<td>Information is distinguished by its meaning</td>
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<tr>
<td>Content</td>
<td></td>
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<tr>
<td>Examples of personal information</td>
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<td>Semantic level</td>
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<td>Syntactic level</td>
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<td>Structural level</td>
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<td>Meaning</td>
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The potential advantages of introducing this kind of a data property right can be developed based on the general principles of intellectual property rights. Recognizing


\(^\text{19}\) See Zech, fn. 14 at 3, 137, 140.

data property rights could: (1) create more incentives for collecting object data in the first place (“generation”) and (2) make these data available to the market through investments (“commercialization”); furthermore, the creation of a specific data property rights regime could (3) stabilize transactions and restore legal certainty, and the regime could provide for mandatory exceptions and limitations ensuring that other economic operators will have (4) rights to fair access to the data.21

Most scholars with a background in economics state that there is no urgent economic need for a specific data property rights regime22 and that the existing rules of contract law provide a sufficient legal framework for fostering the best possible use of data. According to these scholars, the only major problem facing the “data economy” is the lack of sufficient data access. They agree, however, that this problem does not necessarily require a data property right but rather an adequate access rights regime.23 In conclusion, it is, therefore, reasonable to assume that the creation of general data property rights might facilitate the aspects above of the data economy, but it is certainly not economically necessary.

B. Conceptual Problems and Constitutional Concerns

The possible constitutional foundation of this kind of a data property right has not yet been the topic of much discussion, probably because it is not easy to determine who is actually producing (and would hence “own”)24 the data to be protected by a data property right. The first conceptual challenge of introducing a general data property right would be to identify the holder of such a right. Considering the situation of connected cars, for example, at least two stakeholders could be considered the producers of the vehicle data.

On the one hand, the owner usually operates the vehicle and pays for the costs related to the operation, so it seems fair for him or her to be allocated the property rights with

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22 Some are more skeptical (considering, at this point already, the conceptual problems): see Drexl, id. (“no reasons can be identified that would argue in favor of introducing data ownership”); and see Schweitzer & Peitz, id. at 72 (“keine hinreichend belastbare Rechtfertigung” — “no justification”).

23 The introduction of an access rights regime would raise several legal follow-up questions. For example, who would have such an access right? What restrictions must be provided for? Who decides in the case of a dispute? However, these issues would go beyond the scope of this paper.

24 For reasons of simplification, alternative options of attributing the data property right are not discussed in this paper. The entire range of options include attributions to (1) the data subject within the meaning of Article 4(1) GDPR, (2) the owner of the “smart object” (as the “scriptor” or “producer” of the object data), (3) the intellectual creator of the data, and (4) the person who is making the investments necessary to create the object data. For a more thorough discussion of these approaches, see Denker, Graudenz & Schiff et al., fn. 6 at 90–99.
regard to data produced by his or her car. From this perspective, the constitutional foundation of a data producer’s right could be the right to property. Of course, the situation becomes more complex if the owner and the user are not the same person, for example, if the user has borrowed or rented the car from the owner (for example from a car sharing company).25

On the other hand, we have seen that car manufacturers have a vital interest in data generated by cars, which they have developed, produced, and equipped with sensors and IT systems. In view of their freedom to conduct their businesses, they also deserve a certain level of legal protection, particularly against powerful third parties such as international internet companies pushing into the markets for connected car data.

Against this background, it seems quite difficult to determine who should be considered the producer (and hence the legitimate “owner”) of car-generated data. Certainly, the environment of smart cars might be relatively easy to oversee, and hence the attribution of car-generated data, in particular, could be manageable. However, other technological settings — for example, complex networked environments26 — would intensify the attribution problem, and a general data property right would easily become overly burdened in multi-dimensional constellations. It also deserves a mention that attribution problems could hardly be adequately solved by introducing “joint data ownership.”27 This idea would contravene the very purpose of recognizing data property in the first place (i.e. clearly allocating the benefits of the use of data to a certain person to promote the generation of and investments in object data), and it would probably not be practically feasible.28

If we consider the possible stakeholders in machine-generated data in terms other than the potential “data owners,” this leads to even more conceptual problems and deficits of the data property paradigm. As the concept of data property is related to the syntactic level of information, it would apply to any kind of “smart object” information, irrespective of the content of the information — that is, the encoded information in the semantic sense — and of any third-party rights that may be related to the semantic information. What if this semantic information amounts to the manufacturer’s trade secrets or personal information related to third persons? Quite obviously, a data property right would be extremely conflict-prone. Therefore, a data property rights regime would necessarily have to provide extensive limitations and exceptions for the data property right. Again, an overly vague design of a property right in this sense would contravene the very purpose of introducing it.

25 See Hornung & Goebel, fn. 6 at 4, 265, 269.
27 This idea was suggested by Louisa Specht, see Specht, fn. 18.
Both the attribution problem and the high risk of conflict with other substantial rights and interests ultimately result from the fact that object data as such are multi-relational, that is, they can be related to innumerable persons and (other) objects. Multi-relationality is certainly not something entirely unusual in the sphere of intellectual property law. Copyright law, for example, is also multi-relational. Thus, a copyright needs to be exercised by the author with due respect to the rights and interests of other parties, and copyright laws need to provide for various limitations on copyright through lawfully permitted uses. In contrast to copyright, however, the subject matter of a general data property right would remain very unspecific. While copyright usually subsists in specific “original works of authorship” and typically requires a definable “intellectual creation,” a general data property right would cover any syntactic information produced by a given object in relation to virtually any other objects, persons, or events. In this way, data regulation in the “internet of everything” would turn into a “regulation of everything.”

From a constitutional point of view, the fact that general data property rights would be multi-relational and unspecific suggests two conclusions. First, there is certainly no constitutional obligation for the legislator to create a general data property right. Despite Article 14 of the German Basic Law containing a duty to “guarantee” property rights including forms of intellectual property, this duty is only in force with respect to objects of (potential) property that call for and deserve distinct legal protection. In carrying out the constitutional duty to guarantee intellectual property in particular, Article 14 requires the legislator, in principle, to adequately allocate the property rights and benefits as the valuable substrates of the owners’ individual achievements. However, we have established that on a general level, there are no such outstanding individual achievements of a certain single person with regard to all the data that might be generated by an object. On the contrary, there are typically several stakeholders who could be considered as the legitimate “owners” of these data, and even more whose vital legal interests are affected by the data. Therefore, the Federal Constitutional Court has recognized that the legislator should be free of strict constitutional obligations if and to the extent that the potential subject matter of the property right has strong functional relations to the interests of other

29 Cf. Ch. 6 of the German Copyright Code (“Urhebergesetz” – UrhG).
30 See e.g. 17 U.S. Code § 102.
31 Cf. Sec. 2(2) of the UrhG.
32 This is the Federal Constitutional Court’s settled-case law with regard to copyright law; see BVerfGE 31, 229 (240–241); 49, 382 (394); 79, 29 (40). See also BVerfGE 36, 281 (290) with regard to patent law. For scholarly writings see Frank Fechner, Geistiges Eigentum und Verfassung (Intellectual Property and Constitution), Mohr Siebeck (Tübingen), at 130–132 (1999); Bernd Grzeszick, Geistiges Eigentum und Art. 14 GG (Intellectual Property and Article 14 GG), 51 Zeitschrift für Urheber- und Medienrecht (Journal for Copyright and Media Law), 5, 344, 350 (2007); and, Charlotte Kreuter-Kirchhof, Personales Eigentum im Wandel (Personal Property Undergoing Change), Mohr Siebeck (Tübingen), at 195–197, 205–207 (2017).
people, groups, or even society as a whole. With this in mind, it would be almost impossible for the legislator to comply with strict obligations under Article 14 on a general level. Article 14 might raise the need for legislation in specific situations and under specific circumstances — maybe with regard to the *inter partes* relationship between car owners and manufacturers — but does not call for a general *erga omnes* right to data property.

Rather — and this would be the second conclusion from a constitutional point of view — the attempt to create a general data property right runs the risk of violating constitutional law: If the legislator fails to provide an adequate allocation of the rights which he creates, Article 14 would most likely render his work unlawful. Moreover, if the reasoning behind the creation of an exclusive general data property right is not sufficiently substantial, it cannot serve as a legitimate basis for the restriction of the rights and interests of other stakeholders that might be affected by the exercise of the data property rights (for example, another person’s right to self-determination or a company’s trade secrets). For these reasons, the legislator should refrain from introducing a general data property right.

In addition to these conceptual problems, it would remain unclear how a data property right could be protected (against unauthorized use) and, if necessary, enforced against powerful stakeholders such as international internet companies. This is relevant, as under both European Union law and German constitutional law, every individual whose individual rights have been allegedly violated must be afforded effective legal remedies, at least in principle. In both intellectual property law and data protection law, where the need for protecting the personality rights of data subjects is considered to be very urgent and a matter of public interest, practical experience demonstrates that data protection authorities are facing significant and increasing enforcement problems in online contexts, particularly with regard to the private sector. At least for consumers, enforcing their data property rights would probably be even more difficult, especially as enforcement would hardly be a matter of concern for public authorities.

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33 Cf. BVerfGE 50, 290 (340).
35 The proposal of introducing a “collective enforcement mechanism” (including the creation of a specific “collecting society” or the introduction of “machine data fees”) was made by Karl-Heinz Fezer in *Theorie des immaterialgüterrechtlichen Eigentums an verhaltensgenerierten Personendaten der Nutzer als Datenproduzenten* (Theory of Intellectual Property Ownership of Behavior-Generated Personal Data of Users as Data Producers), 20 MultiMedia und Recht (Multimedia and Law), 1, 3, 5 (2017); and in id., *Ein originäres Immaterialgüterrecht sui generis am verhaltensgenerierten Informationsdaten der Bürger* (An Original Sui Generis Intellectual Property Law on the Behavior — Generated Information Data of Citizens), 7 Zeitschrift für Datenschutz (Journal for Data Protection), 3, 99, 103 (2017). However, this appears rather unrealistic and not practically feasible.
Finally, all these uncertainties following from a general data property right might strongly impede the free flow of information, which is a crucial element of an innovative economy. Similarly, the granting of exclusive rights and data monopolies to certain stakeholders will not necessarily promote innovation. For these reasons, the legislator should not consider creating a general data property right.

**CONCLUSION**

With the emergence of the IoT and the advanced technological opportunities of processing object-generated data, new economic values and new forms of commercializing information are being created. This does not mean, however, that these developments automatically require new legislation. Premature attempts to regulate the internet of everything, particularly by introducing a general *erga omnes* data property right, might easily turn into an excessive “regulation of everything.” This would not only raise obvious economic concerns, but undue regulation could also hamper the uptake of innovation and decrease the possible welfare gains from technological progress. In particular, a general right to data property would also cause serious constitutional problems. Any attempt to introduce such a right is likely to get lost in perplexity, torn between the conflicting legitimate rights and interests of “data owners” and third parties. Moreover, it would be unclear whether and how a data property right could reasonably be enforced by its holder. For these reasons, the considerations on the European and national level to create a general\(^36\) exclusive data property right should be dropped.

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\(^{36}\) Instead of creating a general data property right, the legislator could take a more specific approach. We could instead be discussing certain areas in which a property right related to specific objects might actually be (economically) necessary, and how we could balance the specific rights and interests of typical stakeholders in these fields.