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COMMENTARY

Data for the common good in the common European data space

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Abstract

The EU's Common European Data Space (CEDS) aims to create a single market for data-sharing in Europe, build trust among stakeholders, uphold European values, and benefit society. However, there is the possibility that the values of the EU and the benefits for the common good of European society may get overlooked for the economic benefits of organisations if norms and social values are not considered. We propose that the concept of "data commons" is relevant for defining openness versus enclosure of data in data spaces and is important when considering the balance and trade-off between individual (market) versus collective (societal) benefits from data-sharing within the CEDS. Commons are open-access resources governed by a group, either formally by regulation or informally by local customs. The application of the data commons to the CEDS would promote data-sharing for the "common good." However, we propose that the data commons approach should be balanced with the market-based approach to CEDS in an inclusive hybrid data governance approach that meets material, price-driven interests, while stimulating collective learning in online networks to form social communities that offer participants a shared identity and social recognition.

Policy Significance Statement

Literature on the concept of commons testifies to digital data as carriers of cultural and social knowledge that form online users' communities and interact with offline social context. The European Union strives for fair, transparent, proportionate, and non-discriminatory data spaces. The article proposes the inclusion of data commons in hybrid data spaces that consider data as an economic, cultural, and social good. Hybrid data spaces aim at a competitive European economy as well as at social welfare, (re)distribution, and human culture conservation. A review of data commons informs policymakers and practitioners to come to an equitable and socially sensitive design of European data spaces that includes decentralized community- and platform management.

1. Introduction

The European Strategy for Data envisions three core objectives: promoting free data flow, respecting European rules and values, and establishing fair and practical rules for data access and use (COM/2020/66 final, 2020). It aims to create a single data market that ensures Europe's global competitiveness through the creation of Common European Data Spaces (CEDS) (European Commission, 2024). The CEDS will

comprise 14 domain-specific data spaces, including health, agriculture, energy, and finance (see here for the full list: European Commission, 2024). Currently, many EU-funded research projects are underway on each of these 14 domain-specific data spaces to try to identify the technical architecture, EU policy, business models, and values to govern these data spaces. These ways of governing CEDS are referred to as four modalities of regulation by Lessig (2006a)—architecture, law, market, and norms—which we will use in this paper as a way to illustrate the governance of CEDS.

To begin with, Lessig's architecture modality can be seen in how the CEDS is designed: a data space is "common data infrastructures and governance frameworks, which facilitates data pooling, access and sharing" (European Commission, 2024). This data architecture allows for the integration and use of data, but where data is stored and left at the source (Kirstein and Bohlen, 2022; Scerri et al., 2022). In other words, European data spaces are decentralised and "do not require a standard database schema and allow for the coexistence of different types of data" (Ryan et al., 2024), with integration "achieved on a semantic level using shared vocabularies" (Otto, 2022, p. 7). There is no central storage place or central authority controlling the data space. Thus, data exchange happens directly between those involved in the data space. Therefore, the governance of data spaces, such as CEDS, holds the opportunity for secure and trustworthy data-sharing in an open and participatory way—at least, that is the goal of the European Commission (EC) (European Commission, 2024).

One of the main drivers behind CEDS is the ambition for economic growth by building a "single market for data" (European Commission, 2024) (Lessig's market modality). The reason for this is that sharing data has commercial and non-commercial benefits. A trusted data-sharing environment will have a substantial impact on the data economy by incentivising the marketing and sharing of proprietary data assets through guarantees for fair and safe financial compensations (Curry et al., 2022), facilitating collaboration, cross-sector innovation, and new business models (Otto et al., 2022). Non-commercial, for-benefit data sharing leads to enhanced research (Grossman, 2023) and facilitates learning, co-creation, and community cohesion (Bauwens and Pantazis, 2018).

However, to ensure fair data-sharing in CEDS, there needs to be guidance on what can and cannot be done about data-sharing. In this regard, recent European policy developments and legislation have given much guidance and direction to how CEDS can be governed. For example, there are many requirements on how organisations can share personal data, establishing digital rights for individuals over their data, and developing legislation on data-sharing resulting from IoT devices (see, for instance, the Data Act—2023/2854—EN—EUR-Lex and the General Data Protection Regulation (GDPR)). These legal instruments are the third modality of regulation (Lessig, 2006a).

While much attention has been given to how architecture, the market, and law can help guide the governance of data spaces (such as CEDS), less attention has been given to how social norms and values can, or should be, implemented in the CEDS (however, values such as democracy, privacy, equality, sovereignty have been discussed in the data space literature more generally, but less so in the context of the CEDS (see Curry et al, 2022, Ryan et al., 2024, Purtoova and Maanen, 2023, Zygmuntowski et al., 2021)). Within the EC's proposal of the CEDS, it is assumed that the CEDS will increase profits through data-sharing and contribute to societal good (assumably, through open data for the common good or public use). While the EC claims that European values (European digital principles, such as solidarity, inclusion, participation, and freedom of choice) should be upheld and included in the CEDS, it is unclear what this should look like and how it should be achieved. However, some claim that social norms and values can be integrated into data-sharing governance through one of the other modalities that Lessig (2006a) refers to, such as the market (i.e., values retrieved through market preferences) or the law (i.e., values retrieved by voting, public consultation, etc.) (Dulong de Rosnay and Stalder, 2020).

While there is undoubtedly room for integrating norms within the architecture of data spaces and the market and legal modalities of regulation, this is challenging if these norms are not discussed or understood. In addition, it is not always straightforward to implement norms and values into law, and sometimes, they get overlooked or cannot be easily translated into market preferences. In the context of data spaces, there is the possibility that the values of the EU and the benefits for the common good of European society may get overlooked for the economic benefits of organisations if norms and social

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values are not considered. Much data can and should be shared and used in CEDS for the common good, but if it is only guided and steered by economic benefits, these societal benefits may not be realised.

This paper provides an alternative perspective to the legal-focused and economically-driven perspectives that already guide the CEDS, namely, the data commons. The data commons is a cloud-based data platform with a governance structure that allows a community to manage, analyze, and share its data (Grossman, 2023), with the aim to address social issues (Fisher and Fortmann, 2010; Goldstein et al., 2018). While we do not intend for the data commons to replace the other three modalities of regulation that Lessig (2006a) outlines and which are already being implemented in the guidance of the CEDS, we hope that a greater focus on social norms can also be incorporated into the CEDS governance. We provide the data commons as one way that this could be achieved and our paper demonstrates how its inclusion could lead to a kind of "hybrid data governance" data space, in which some parts are considered commons and governed by communities, either online or offline; some parts open public resources managed by the state through policies and regulations, and parts are under a market regime to make a profit.

In section 2, we will first give an introduction to the concept of the common as a common-pool resource, the resurgence of "new commons" (section 2.1), and how the knowledge and digital commons are considered new commons (section 2.2). Section 3 outlines how our definition of data commons can be integrated into data spaces (section 3.1), such as the CEDS. Section 3.2 argues that with data commons in data spaces, the focus of data sharing shifts from the creation of value to the purpose of value creation, whether for the individual (corporate) or the common good. Section 4 details how this interpretation of data commons can be integrated into a hybrid data governance model in data spaces, including all four modalities of regulation outlined by Lessig (2006a). We finalise with some conclusions in section 5.

2. Overview of the commons concept

Before describing the data commons, it is important to provide some background to the origin of the "commons" approach, more generally. To begin with, "commons" are common-pool resources that are particularly problematic to manage because it is difficult to exclude people from using them; that is, it is difficult to fence, bind, or divide them (excludability). Another characteristic of common-pool resources is rivalry, that is, one person's actions may affect another's enjoyment of the resource. What is taken away cannot be used by others (Birkinbine, 2018; Hess, 2008; Mogi, 2007; McCay and Jentoft, 1998). See Table 1.

Commons are customarily known as communal lands belonging to a village, to be used freely by the villagers or "commoners" to benefit all. Östrom (Östrom and Ahn, 2007) emphasise that in collective action, commons form a third way of organising society and the economy that differs from both market-based approaches, governed by prices, and bureaucratic forms of organisation, governed by hierarchies and commands. (Amin and Howell, 2016; Dulong de Rosnay and Stalder, 2020). As an alternative to centralised government or unrestricted markets, community governance integrates social capital (trust, networks, volunteering and cooperation, knowledge) as a collective outcome. (Östrom and Ahn, 2007, De Angelis, 2014).

Table 1. *Common pool resources characterized by rivalry and non-excludability*

		Excludability	
		High	Low
Rivalry/substractability	High	Individual Property (finite resources)	Common-pool resources (irrigation systems, libraries, infrastructure)
	Low	Intellectual Property (books, music)	Open access goods (sunset, air, language, free software)

Source: adapted from Östrom (2005), Birkinbiné (2018) and Hess and Östrom (2006).

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2.1. New commons

New commons (NC) are shared resources that have recently evolved or been recognized as commons. They are traditional public goods (non-rivalrous, low excludability resources) where new technologies have enabled the capture and privatisation of previously uncapturable public goods (genetic data, outer space, deep seas, and the electromagnetic spectrum). New technologies make tangible and non-tangible resources more accessible and vulnerable to the commodification of resources considered the property of all (Hess, 2008). These resources are considered worthy of protection for the "common good," such as art (aesthetics), cultural heritage, ideas, knowledge, innovations, software, or relationships (Hess, 2004). The increasingly globalising world has brought the realisation that commons may apply to any collective management of resources benefitting society. These "new commons" are resources that lack pre-existing rules or precise management arrangements and may refer to global resources such as outer space and deep ocean or intellectual property rights (e.g., utilisation of seeds) or online spaces and resources (Hess, 2008).

Like traditional commons, new commons refer to a social movement of community building and community governance. Some (see Hess, 2008) argue for educational reforms that would make the renewal of the cultural and educational commons a central focus of education to evaluate and reflect on what should be commodified and what should remain a commons.

2.2. Knowledge commons

Knowledge commons refer to creating and sharing information, knowledge, data, and other intellectual and cultural resources by a defined community or group (Strandberg et al., 2017). The relevant community is determined not by geographical proximity to an existing resource but by some connection—perhaps of interest or expertise—to the knowledge resources (Frischmann et al., 2014).

Conventionally, information is considered a public good that is nonrival and nonexcludable, to be protected from enclosure. Access can be limited, for example, when subject to intellectual property rights or patents. Also, the artefacts, the information carriers, can limit their access, for example, by using subscriptions and paywalls. Consequently, knowledge and information are increasingly considered commons as they may lead to inequalities and social exclusion and undermine democracy, autonomy, and resilience (Dulong de Rosnay and Stalder, 2020).

The knowledge creation process involves converting between explicit and tacit knowledge. While we are used to respecting scientific knowledge gathered by experts, it is only in combination with "local knowledge" that the knowledge takes on a real value (Hess and Östrom, 2006). Explicit knowledge is transmitted by standardised and systemized words (e.g., information and data), which can be included in data spaces. Tacit knowledge is acquired through interaction to exchange cultural codes and meaningfulness (Shuhuai et al. (2009) and it is difficult to formalise and transmit as an economic good. (Özveren and Gürpinar, 2023). In other words, innovation is inherently connected to learning processes in which new (usually marketable explicit) knowledge is created and integrated into the local context (tacit knowledge involving local customs and values). This underscores that a value-based approach to information exchange is essential for innovation to occur and that those values are context- and community-dependent.

2.3. Digital commons

Data governance involves the interests and value-based objectives of the leading stakeholders and makes power relations and forms of agency visible (Micheli et al., 2020). Though digital commons are not geographically bound, knowledge and information are codified resources rooted in a local (social) context because their use requires codification to make sense. To safeguard the societal benefits and reciprocity digital commons provide, data spaces must provide opportunities for community management to enhance offline (social and technical) innovations and protect social values that rule human interaction.

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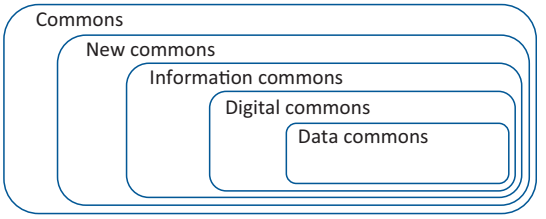

Figure 1. *Digital knowledge as a subset of the commons. Source: processed by author, taken from definitions by Dulong de Rosnay and Stalder (2020) and Grossman (2023).*

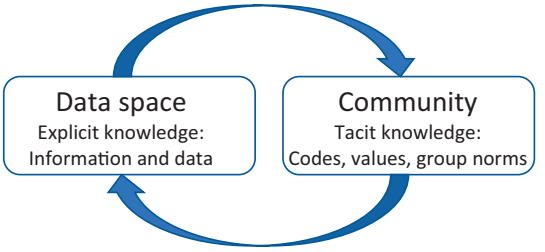

Figure 2. *The nesting of data spaces in online/offline communities of users-producers. Source: elaborated by authors, based on Shuhuai (2009), Figure 1 and Hess and Östrom (2006), figure 2.*

As data spaces form part of the digital domain, in the next paragraph, we discuss data commons as an embedded subset of the commons presented so far (see Figure 1). Historically, commons refer to community customs in managing natural resources. New commons are defined as new technologies that make public and unclaimed resources more accessible and subject to economic rivalry and enclosure (Hess, 2008) threatening commodification of human interactions and expressed values as enshrined in Article 2 of the Treaty of European Union. Digital commons include adequate infrastructure and education to ensure that online knowledge is accessible, equitable, and protected (Hess, 2004). Data commons are cloud-based data platforms with a governance structure that allows a community to manage, analyse and share its data (Grossman, 2023), codes, and design (Bauwens and Pantazis, 2018).

3. Data commons and data spaces

Data commons are not synonymous with public or open data. Data commons refers to a well-defined community that manages and analyse large datasets using scalability provided by cloud computing (Grossman, 2023), while attempting to solve social problems (Fisher and Fortmann, 2010). Benkler and Nissenbaum (2006) refer to commons as a socio-technical system that enables collaboration among large groups of individuals who cooperate effectively to provide information, knowledge, or cultural goods without relying on either market pricing or managerial hierarchies to coordinate their common enterprise. Different from both bureaucratic state power and the commodity logic of the market, the commons build on a definition of value that respects and reflects the diversity of particular local contexts and communities, and therefore, they develop their institutions (Bauwens and Pantazis, 2018). See Figure 2.

Data commons is a promising mechanism to advance the collective "data for good" capacity by lowering the barriers to data collection, sharing, and use (Goldstein et al., 2018). It differs from open collaboration innovation in that it does not separate (corporate, centralised) ownership from data management. Likewise, public data is not managed in purposeful collaboration nor characterised by collective ownership or shared stewardship among contributors. Data commons are defined by a community for specific purposes under certain rules (Potts et al., 2023).

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3.1. Data spaces

Data spaces include hard and soft components, such as intangible knowledge and ideas, their observable representation in data and information, their digital carriers (websites), and the facilities that enable storage exchange, and sharing (digital hardware and software). Each component has issues of accessibility and rivalry concerning education, skills, finance, and infrastructure, as outlined in the data commons literature (Hess and Östrom, 2006; Potts et al., 2023). The governance of these components has been described as a "trust framework," the data sharing agreement framework provided by the scheme owner for managing the commonly agreed upon procedures within the data space. These include legal agreements, conditions for certification, applicable standards, and architecture. The framework is supported by a "data space authority administrator" to manage participating entities in the data space (IDSA, 2022).

As dataspaces and their purpose are embedded in local (offline) contexts, so is their governance. The multiplicity of interests and motives related to the exchange and production of information in the data space may give rise to social tensions that need to be resolved. These relate to conflicts identified in the data commons literature between private interests regarding the perceived benefits or risks of providing and sharing data and the collective need for reliable information and created benefits for society (Baarbé et al., 2019; Gotgelf, 2022; Strandberg et al., 2017). The CEDS are not exempt from these tensions. Data-driven innovation fosters power asymmetries, as data holders with more resources of valuable datasets have greater power to set the terms on how data is accessed and used (Micheli et al., 2020). The data commons provides a perspective on data sharing that leverages power asymmetries and encompasses responsible management oriented towards improving people's lives and securing the public interest (Zygmuntowski, 2021).

3.2. Data commons in the CEDS

With the introduction of data commons into data spaces, the focus of data sharing shifts from the creation of value to the purpose of creating value (value for whom?). Data commons provide mechanisms to ensure that the public interest is included in the data space architecture by providing ex-ante regimes with design principles aligned with the public interest, defining for whom, why (purpose), and with what consequences data is shared (Zygmuntowski, 2021). Data commons are thus not synonymous with unrestricted open access or "open data." The EU encourages "open data to complement the data in data spaces" (EC, 2019; EC, 2024) without considering data commons as an additional integrated hybrid form of data governance. Data commons in the CEDS would give the data-sharing community not only full access but also an agency to define and enforce the rules of data exchange, thus promoting the principles of good governance (EC, 2001).

Implementing a data commons approach to CEDS implies establishing joint, multi-stakeholder platforms that provide a coordination mechanism across scales and sectors to ensure stakeholder input into national and international decision-making and reporting. When coordination is weak or asymmetrical, information systems often lack the capacity for synergy and coherence, creating mistrust. Developing a data commons approach in the CEDS entails support for individual capacity building (e.g., technical training) and policymaking (national regulatory environment) are to be complemented by measures to strengthen the management capacity of key stakeholders (Gotgelf, 2022).

While data commons emphasise openness, collaboration, and shared governance, participants in a data space maintain control over their data, choosing what to share, whom to share it with, and under what conditions. Governance is typically more federated, with rules and standards set to ensure privacy, security, and data sovereignty.

Therefore, there is a need to integrate multiple approaches to governance (e.g., Lessig's (2006a) four modalities of regulation) according to the purpose it pursues. The market approach to data is effective in opening up new opportunities by giving access to external datasets, enabling the discovery of new markets, customers, or business insights. Data exchange facilitates informed decision-making in areas that require fast, data-driven insights, like supply chain management or financial analysis. The market

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approach is characterised by clear ownership and accountability, whereas the commons approach provides public trust through transparency in decision-making. Community collaboration is crucial to addressing complex societal issues, but maintenance of the governance structure may require significant resources.

The following section will examine how data commons can be integrated into a hybrid data governance approach in the CEDS.

4. Discussion: towards hybrid data governance in the CEDS

As shown in the previous section, the data commons approach offers valuable insights and ways to implement social norms in the governance of the CEDS. However, as we mentioned at the start of this paper, we do not intend to replace current means of regulating data spaces (namely, legal instruments, market incentives, and the architecture of data spaces). This paper aims to draw attention to the lack of adequate guidance on how social norms and values are included in the data governance of the CEDS.

This section outlines how a holistic hybrid mode of data space governance can be achieved and how it differs from and can work as an improvement of apparently contravening market approaches for economic growth and innovation and a value-based approach for the common good. To provide more clarity on how this could be achieved in practice, we focus on the different design, infrastructure, and governance mechanism choices that could be made to realise data commons in the CEDS. For this purpose, we adopt a commonly used digital peer-production platforms typology (Dulong de Rosnay and Musiani, 2016). The reason for choosing this typology is that it can help illustrate how data commons could be integrated into the CEDS.

Digital peer-production platforms are structured through five pillars (which strongly correlate with Lessig's four modalities of regulation): ownership, technology, governance, rights, and type and distribution of the value generated (Dulong and Musiani, 2016). We use it to analyse the use of data commons in data spaces (see Table 2).

Table 2 shows that corporate data management tends to be centralised and enclosed due to the competition-sensible nature of data. The five pillars of digital peer production in Table 2 also correlate with some of the aims and ambitions of the CEDS. According to the European data strategy, the CEDS should adopt a decentralised approach in its design, alongside "data sovereignty," "data level playing field." and "public-private governance" (EC, 2023). These design requirements closely relate to the typology of peer production, as well as the key features of the CEDS itself (highlighted in parenthesis in the following quotation) as being "open for the participation of all organisations and individuals (technology), have secure and privacy-preserving infrastructure law (rights), governance mechanisms that guarantee fair, transparent, proportionate and non-discriminatory access rules (governance), respect EU rules and values (value), and empower data holders to make their data available for reuse for free or against compensation (ownership)" (EC, 2024). In the following subparagraphs, we will elaborate on each of the five pillars of digital platforms in Table 2. concerning the CEDS (ownership and rights are evaluated together because of their very close relationship).

4.1. Technology

Technical architecture relates to a system; its components and principles guide its design. The greater the degree of centralisation, the more control the administrator has over the production process and output. Centralised architecture is more straightforward but prone to privatisation and concentration (appropriability). Decentralised architecture enhances the user's autonomy, but with shared responsibilities and fragmenting actions, it is more difficult to control. The design of technical architecture is interrelated with how the data is governed, by whom, and for what purpose. Lessig (2006b) warns that open public digital spaces are increasingly shaped by technology with the potential to limit access. Design principles for data commons in CEDS refer to ownership and the creation of technological sovereignty, for example, algorithms that define access to and processing of data according to the

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Table 2. *Typology of digital peer-production platforms facilitating participation and collaboration*

	Ownership	Technology	Governance	Rights	Value
Centralised	Company Major Platforms	The central server is controlled by the platform owner	Top-down decision-making by the platform owner	Exclusive rights assigned to the platform owner	Concentrated in the hands of the platform owner
De-centralised	Cooperative non-profit Informal un-structured collaboration	Several user-controlled computers/ nodes linked in a peer-to-peer network	Participative democracy Autonomy of peers	Terms of contribution leaving some rights to contributors (e.g., co-generated data rights)	Redistributed within the community and/or society at large

Source: Dulong de Rosnay and Musiani (2016).

values for the common good. The design principles of decentralisation refer to the purpose of data-sharing as defined by a group of stakeholders (Hess and Östrom, 2006; Cangelosi, 2019). The challenge for the CEDS is to provide data space architecture that promotes empowerment and non-discriminatory access rules while guaranteeing the rule of law and interoperability in data exchange. Data space architecture and governance are thus highly interrelated.

4.2 Governance

Governance (the set of decision-making processes, procedures, and design choices) concerns terms of use (licensing), the work process's organisation, and the architecture's design. In the case of CEDS, data exchange is facilitated and protected by law with regulations such as the Data Governance Act and the General Data Protection Regulation (GDPR). These regulations provide transparency and trust to the individual participants in data spaces in their different roles of data provider, data user, or intermediary. How CEDS are to be governed for the common good remains somewhat unclear. The Data Space Support Centre (DSSC), the overarching body to provide guidance and clarity for the CEDS, states that rules and principles of data exchange in CEDS may be defined collaboratively by the different data spaces or by a hierarchic governance authority of one or more data spaces (DSSC, 2024). The data commons approach would appeal to the former mode of governance, indicating the importance of "distributed governance." Distributed governance is bottom-up and generally more empowering to contributors and users in the freedom to decide, exit without losses (of earlier contributions made), and have a voice "without fear or reprimand" (Dulong de Rosnay and Musiani, 2016). As mentioned before, data commons differs from open data as users have more agency in deciding on the architecture and management of the CEDS. To do so, they must be facilitated in acquiring the capacity (skills, facilities, and freedom) to develop and integrate new features into the service and regain technological sovereignty (Zygmuntowski, 2021).

4.3 Ownership and rights

Ownership refers to labour-power, means of production (or infrastructure), and output. Ownership can be centralised in the hands of commercial companies (e.g., Facebook) or a non-profit entity (e.g., Wikipedia).

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In decentralised platforms (such as the CEDS), ownership has a federal character of networks where each node controls its servers (e.g., Diaspora). Ownership of peer production output is related to copyright law, which is present in the use and reuse conditions of created content. More distributed governance enables users to obtain more favourable licensing choices. In a hybrid digital platform, Creative Commons license options guarantee the right of access to all (Alamoudi et al., 2020), while creators' permission decides the right of modification or commercialisation.

Recognising that dataset ownership rights may prevent data access and use, the data common benefits from a hybrid open data license model that gives greater agency to those who contribute data.

Regarding rights, this model falls under the decentralised peer-production platforms, with data contributors also collecting data and participating in both the creation and sale of (single-use) data licenses and developing data collection and management technologies. Additionally, licenses would give the data commons a market-driven dimension by granting users of the model license the ability to use a certification mark, bridging commons with the market domain (Baarbé et al., 2019). The model aims to configure the data governance structure to ensure the equitable appropriation of data and the equal distribution of benefits.

Two possible linked licenses can ensure a fair data common: the first is between collectors and data contributors for data collection; the second is a distribution license between data collectors and data users to make data openly available. The licenses would address the inequities created by the lack of data ownership rights for contributors of data. The challenge is guaranteeing effective rights enforcement that safeguards a proper balance between private allocations and public collective gains; for example, granting access to privately held data to enhance common welfare (Zygmuntowski et al., 2021). The Open Data Directive (2019) has included regulation to facilitate access to public data with marginal costs, and to strengthen the transparency requirements for public–private agreements involving public sector information, avoiding exclusive arrangements (enclosure).

4.4 Value

Value refers to the redistribution of the benefits of the data exchange in CEDS in terms of market-based economics; politics (power, exploitation); and unquantifiable socio-cultural benefits (e.g., construction of social capital, such as community building, accomplishment, reputation, ecological value and social use value of output). What is of value is determined by collectively determined *social norms* (Lessig, 2006a), whether formally (contracts, licenses) or informally (norms). Commonly expressed values for European data spaces are fostering competitiveness, promoting data sovereignty, and stimulating innovation (DSSC, 2024). Nevertheless, welfare issues cannot be solved solely under the market norms of efficiency and low transaction costs. For the market domain to create benefits for the common good, CEDS requires an institutional framework that ensures freedom to operate "building communities of meaning around economic collaboration," for example, sense-making as a value (Benkler, 2017). commons are better at creating non-dividable societal benefits outside the market domain in data spaces. These include cultural and social interaction, eliciting bottom-up social cohesion (Dulong de Rosnay and Musiani, 2016) and non-monetary motivations by offering shared identity and social meaning (Benkler, 2017). Mutual learning is a crucial feature of this process.

For growth, data commons uses social governance mechanisms that manage the utilisation of resources and projects other than property and contract. Taking the organisation of learning processes as an example, data commons require an investment quite distinct from the investment necessary for managing a price-mediated or hierarchically organised enterprise (Benkler, 2017). In data commons, social norms regulate how growth is defined, with the market norm of individual monetary benefits for stakeholders on one side of the spectrum and socially motivated redistribution of wealth and welfare on the other. The DSSC (2024) recommends that individuals should be represented in the governance authority of data spaces to ensure trust, control, and transparency. It sees a design challenge for fundamental data exchange and how the distribution of benefits is communicated.

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Table 3. *Commons versus market domain in data spaces*

Dimension	Digital data commons	Data spaces organised as a marketplace
Governance	Institutional arrangement/intellectual public domain representing local customs generated by collective action	Economic laws of demand and supply; bilateral contracts; Access defined by commercial value
Ownership	Shift from the central idea of common pool resources (traditional commons) to the relevance of access (digital commons). Different degrees of openness (level of restrictions to downstream users by using licensing)	Private property regimes; Integration of common-pool resources in "open" corporate strategies (crowd-based inputs into company management.
	Digital commons are governed by a hybrid community (volunteers/professionals).	Corporate structure, shareholders aiming at dividend
Capital creation	"Commoning": creating a community—intellectual public domain. Encourage stakeholders to create —through standardized licenses — free access areas that are not imposed from above.	Creating a space for economic transactions directed at (sustainable) exploitation of resources.
Value creation and distribution by data space	Commons-based peer production Working towards shared outcomes in self-governing networks based on voluntary participation and reciprocity.	Collaboration based on market prices or managerial commands.
	Collaboration is based on motivational drives and social signals.	Return on investments to shareholders only.
	Purpose: Return on investment to the community, state or the public.	
Value creation and distribution for society	Non-dividable societal benefits: culture, heritage, identity.	Dividable private actor benefits
	Non-dividable production or use	Dividable production and use.
	Non-rivalrous, non-excludable	Competitive.
Embeddedness	Growth by embeddedness and interaction of smaller, local communities within an ecology of interoperable projects	Growth by accumulating profit and corporate scale.

In Table 3, we use the elements of the peer-production platform typology (Table 2) to illustrate the differences between commons versus market forms of governance mechanisms.

5. Conclusion

This paper explores alternatives for embedding social norms "for the common good" into the data space and how this would relate to a market-driven approach.

Using the four modalities by Lessig (law, norms, architecture, and market) to identify how the CEDS can be governed, we see that European Law provides the basic minimum requirements data spaces have to follow so that the rights of its citizens are protected. However, it does not provide much clarification of

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how the CEDS should be governed outside of the legal requirements to safeguard values and social norms pronounced by the EU.

The outlook on the CEDS for generating economic benefit and economic growth and contributing to society and societal goods creates tensions as these ambitions prosper under different governance mechanisms that regulate individual growth-driven and public welfare-driven rights. Data are digital reflections of the existing reality and are already embedded in the social structures of human interaction. The data commons approach to data governance comes from recognising that not all data should be considered a commodity. Constitutive rights and values have already been laid down in European law, but allocating rights or differentiated value appreciation is insufficient to construct an ecosystem of trust.

Nevertheless, the four governance modalities feed into each other. The commodification of data is regulated under European data law. The implementation of European values and social standards impacts how technology and the CEDS' architecture are designed, as was shown for peer-production platforms. New technologies are increasingly determining the design and governance of digital infrastructure and consequently defining the limits of public space.

The introduction of data commons in digital data spaces highlights the use of collaborative governance among stakeholders to protect and guarantee the use of data "for the common good." Decentralised, collaborative governance is an enforcing and enabling interface between the common good and the market domain. The CEDS should abide by current laws for the protection of citizens and norms, while ensuring decentralized governance mechanisms to allow for a social value approach to data. The DSSC could function as an interface that regulates collaborative design, monitors access or exclusion to the algorithmics, and gives access to databases with differentiated privacy and licenses granting returns to the public. The introduction of data commons for the governance of the CEDS could contribute to the future-proof preservation of cultural variety and equal rights to prosper in the EU.

We have argued that including data commons may support the implementation of European values (norms) in the CEDS. The data commons and the shared-market perspective on data spaces are not mutually exclusive. Both approaches are value-driven but differ in their focus on public or private impact and the mechanisms to create an ecosystem of trust. They lead to different combinations of Lessig's four modalities of regulation (architecture, norms, law, and market rules) in the CEDS. The design and implementation of hybrid data governance in the CEDS require more deliberation.

This paper was meant as a first step towards addressing the current gap around discussions of social norms and values in the context of the CEDS. While we provided one possible way (the data commons approach) to integrate social norms and values into the CEDS, other approaches may also offer insights into achieving this. Furthermore, while we provided a preliminary outline of how the data commons approach could be embedded into the existing market-based approach of the CEDS (i.e., through our hybrid data governance approach), further research is needed to build upon this model and to develop how it can be realised in practice. Overall, this paper has illustrated the importance of including social norms and values in the CEDS and emphasised why we must also proactively ensure the CEDS benefits society and the common good, not simply for the economic benefit of companies and the private sector. This explicit emphasis on the importance of the CEDS for the common good needs to be embedded in the goals of the DSSC and the projects that will realise the rollout of the CEDS, funded through the Digital Europe programme and Horizon Europe (European Commission, 2024).

Data availability statement. Data availability is not applicable to this article as no new data were created or analysed in this study.

Author contribution. Conceptualization: OvdV; Methodology: OvdV, MR; Writing—original draft: OvdV; Writing—review and editing: MR. All authors approved the final submitted draft.

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