Electronic Markets (2025) 35:111
https://doi.org/10.1007/s12525-025-00860-1

PREFACE

Data ecosystems in IS research: The road so far, where we are now, and the road ahead

Frederik Möller[1,2] · Christine Legner[3] · Gero Strobel[4] · Thorsten Schoormann[2,5] · Cinzia Cappiello[6] · Bernadette Loscio[7] · Boris Otto[2,8]

Published online: 4 December 2025

JEL Classification A1

Research on data ecosystems has evolved significantly. What began as a primarily conceptual exploration of data sharing in complex networks (Oliveira et al., 2019) has become an established field of research in the Information Systems (IS) discipline. The shared exploitation of data in ecosystems—whether industrial, personal, or other data of joint interest—is now a pivotal endeavour for many organizations, propelled by rising regulatory demands and intrinsic business needs (Möller et al., 2024). Over the past decades, data has traversed from (formerly analogue) administrative tools into a versatile resource that serves as a conduit for organizational opportunities, deeply rooted in its nature as a *semiotic artifact* (Alaimo & Kallinikos, 2021, p. 20; Legner et al., 2020), i.e., an artifact that codifies real-world meaning into abstract (digital) descriptions of reality (Ackoff, 1989; Alaimo et al., 2020; Eco, 1979). These representations can be combined, contextualized, and aggregated to convey extended meaning and generate information (Ackoff, 1989), for instance, to produce accurate and complete insights on sustainability attributes throughout supply chains (e.g., Körner et al., 2025; Krasikov & Legner, 2023). The distinct characteristics of data—such as its capacity to *capture reality* (Alaimo & Kallinikos, 2021) and *non-rivalry* (Tayi & Ballou, 1998)—create a complex field of tensions for organizations. Sharing digital data is often perceived as "easy," for instance, sending an Excel file via e-mail. Yet once the file has been sent, the data leaves the provider's control: even if errors are later discovered, permissions were lacking, or the data provider wishes to retract it, the data is already "in the world." The provider is very likely unaware of how their data is used, shared, repackaged, or altered by third parties (see also Jarvenpaa & Markus, 2020; Parmiggiani et al., 2024). Consequently, sharing data across organizations and/or individuals entails navigating a multitude of complex determinants.

Data ecosystems research is the study of complex data sharing endeavours within networks of *data providers*, *service providers*, *data consumers*, and *data intermediaries* (Oliveira et al., 2019), addressing **strategic**, **organizational**, and **technological dimensions**. The term itself combines two notions: (digital) data, as the digital representation of reality (Alaimo & Kallinikos, 2021), and *ecosystems*, a concept borrowed from biology that implies a systemic view of a community populated with different entities co-existing, often in symbiosis (Tansley, 1935). The foundational logic of data ecosystems lies in different roles collaborating around the shared object of digital data to create value (albeit value that may differ significantly for each actor). This shared object provides the primary motivation for building and joining data ecosystems. The core activity is the *sharing* of data, from one actor to another (Oliveira et al., 2019), with the resulting value ranging from ensuring regulatory compliance to developing new business models to achieving operational excellence through optimized business processes (Möller et al., 2024; Toorajipour et al., 2024). Sharing digital data is not a new concept in itself, but it has gained increased momentum through the continuously emerging and improving digital capabilities in business and society (Jussen et al., 2024). For instance, digital data has

✉ Frederik Möller
Frederik.Moeller@tu-braunschweig.de

1 TU Braunschweig, Braunschweig, Germany
2 Fraunhofer ISST, Dortmund, Germany
3 University of Lausanne, Lausanne, Switzerland
4 University of Duisburg-Essen, Essen, Germany
5 Roskilde University, Roskilde, Denmark
6 Politecnico di Milano, Milan, Italy
7 TNO, Soesterberg, Netherlands
8 TU Dortmund University, Dortmund, Germany

long been shared along existing value chains to support daily operations (e.g., order fulfillment), to comply with documentation and reporting requirements, or to run day-to-day business (Alaimo & Kallinikos, 2021).

Today, we observe various initiatives in practice and research that dedicate their work to generating data ecosystems as complex networks of diverse data providers and data consumers (e.g., Catena-X, 2024). Even though research on data ecosystems is relatively young, the field has evolved with multiple *foci*. It is now rich with studies reporting on real-world designs of data ecosystems, such as in design-oriented studies.

Where we are now: Papers in the special issue

With the special issue, we aimed to provide a forum for curating the current discourse on data ecosystem research, irrespective of any single domain, application scenario, or methodological orientation. The special issue further ties into and builds on prior research in the broader field of the data economy (Reuver et al., 2024). The special issue comprises 14 articles that explore diverse themes in data ecosystems research. Some focus on the core activities of data sharing, while others address specific applications across a wide variety of domains. We are particularly excited about the breadth of domains represented, ranging from financial services to automotive data spaces, as well as cultural and educational data ecosystems. The framing of the special issue is guided by three dimensions: *foundation*, *configuration*, and *value*.

Foundation

Even though data ecosystems are now an established field in IS research, ongoing real-world developments—such as technological advances, evolving use cases for digital data, and emerging regulations, to name just a few—create a continual need to (re)examine their foundations. Such foundations include infrastructure for storing and processing data, governance to ensure quality, privacy, and trust, as well as management practices to organize and maintain data-sharing relationships. They also rely on skilled people, collaboration among actors, and supportive regulatory and institutional frameworks. Together, these elements enable data to flow, be trusted, and create value. Evolution of a data ecosystem must balance all these aspects to ensure data remains secure, trusted, and valuable over time.

Foundation I: Stuck in the middle with you—Conceptualizing data intermediaries and data intermediation services by Julia Schweihoff, Anzelika Lipovetskaja, Ilka Jussen-Lengersdorf, and Frederik Möller

Schweihoff et al. (2024) focus on a pivotal yet understudied actor in data ecosystems—*data intermediaries*. They develop a conceptualization of data intermediaries and systematize their relationship with data providers and data consumers by mapping services, monetary flows, and activities between them. Thereby, the paper contributes to our understanding of data intermediaries in light of new regulations (e.g., the Data Governance Act) and the constantly increasing needs of companies to acquire data.

Foundation II: Wallet wars or digital public infrastructure? Orchestrating a digital identity data ecosystem from a government perspective by Konrad Degen and Timm Teubner

Degen and Teubner (2024) explore the proliferation of digital identities in data ecosystems against the backdrop of the EU eIDAS 2.0 legislation, shedding light on digital identity ecosystems between private and public entities with governmental orchestrators. They propose a governance model for these data ecosystems and identify key tensions in their orchestration (e.g., market variety and ease of use). The paper contributes to data ecosystem research as it explicitly hones a deep understanding of digital identities in data ecosystems.

Foundation III: Governing the emergence of network-driven platform ecosystems by Arthur Kari, Pepe Bellin, Martin Matzner, and Martin Gersch

Kari et al. (2025) investigate the emerging phenomenon of platform ecosystems through a single case study of the Catena-X Automotive Network. The paper meticulously narrates and documents the emergence of Catena-X and its relationship with associated organizations. Building on this narrative, the authors examine the formation, development, and operational phases, ultimately deriving a process model for the emergence of a network-driven platform ecosystem. The study brings an intriguing facet to data ecosystems research, both temporally and from a governance perspective, by charting distinct phases of data ecosystem emergence through one of its most prominent examples.

Foundation IV: SynDEc: A synthetic data ecosystem by Fabian Sven Karst, Mahei Manhai Li, and Jan Marco Leimeister

Karst et al. (2025) report on the design of a synthetic data ecosystem employing a design science research (DSR) approach in collaboration with two practice partners. In the context of financial services and fraud detection, synthetic data and data sharing could help train machine learning models while preserving privacy. The study makes an excellent contribution at the intersection of data ecosystem research and one of its new frontiers—AI. It advances our understanding of how the production of synthetic data can be meaningfully integrated into data ecosystems, enabling the use of financial data without exposing personal details.

Foundation V: Data management as a joint value proposition—A design theory for horizontal data sharing communities by Hippolyte Lefebvre, Pavel Krasikov, Christine Legner, and Gabin Flourac

Lefebvre et al. (2025) draw attention to the emerging form of horizontal data sharing—as opposed to the traditional vertical data sharing along existing value chains—and the development of data sharing communities. They study the emergence and formalization of data sharing in a pioneering data sharing community involving more than 40 multinational companies, and derive eight design principles, centered on the domain of interest, the community members, the institutional framework, and shared practices. The study significantly enhances data ecosystems research by articulating prescriptive knowledge on the design of data sharing communities.

Configuration

As data ecosystems build on diverse infrastructures and involve a wide range of actors and heterogeneous data sources, they are inherently complex and dynamic. Therefore, identifying suitable *configurations*, i.e., a distinct combination of actors, infrastructure, and the underlying data, as well as a coherent overarching *modus operandi*, is paramount for building effective data ecosystems for particular purposes.

Configuration I: Data sharing practices—The interplay of data, organizational structures, and network dynamics by Marcel Fassnacht, Jannis Leimstoll, Carina Benz, Daniel Heinz, and Gerhard Satzger

Fassnacht et al. (2024) explore the "lifeblood" of data ecosystems—sharing data between at least one party and another. It does so by proposing a taxonomy of data sharing practices and archetypes, organizing and representing recurring patterns of data sharing practices. The four archetypes (compliance-oriented, efficiency-oriented, revenue-oriented, and society-oriented) contribute to our understanding of *how* data sharing is done and guide practitioners and researchers in implementing and researching data sharing practices.

Configuration II: Setting the stage for a flourishing cultural data ecosystem—A spotlight on business models of cultural event platforms by Maike Althaus, Christian Vorbohle, Michelle Müller, and Dennis Kundisch

Althaus et al. (2025) tackle the challenge of classifying and designing domain-specific data ecosystems, a topic that has been widely left uncharted until now. They present a taxonomy of data ecosystems, exploring the case of a cultural event platform. Following common practice, the authors apply cluster analysis to derive a set of six archetypes, including, e.g., ticket providers and publicly funded cultural event platforms. The paper extends data ecosystem research to a new domain, namely, cultural and creative industries.

Configuration III: Governing information privacy in data ecosystems with architectural thinking by Fabian Burmeister, Christian Kurtz, and Ingrid Schirmer

Burmeister et al. (2025) address the challenge of governing privacy within data ecosystems by extending Architectural Thinking (AT) to the ecosystem level. Drawing on case studies and expert interviews, they identify key privacy concerns of business and regulatory stakeholders and introduce a data ecosystem architecture meta-model. The findings indicate that this model provides a systematic foundation for analyzing and mitigating privacy risks, bridging gaps in current approaches.

Configuration IV: Establishing and governing data ecosystems at the crossroads of centralization and decentralization by Philipp Kernstock, Constantin Harms, Andreas Hein, and Helmut Krcmar

Kernstock et al. (2025) explore the emergence of data ecosystems and their shift from decentralized to centralized data governance structures. They report on an in-depth multiple case study and propose rationales for centralization due to increasing complexity in maturing data ecosystems. Their findings illustrate that pursuing the decentralized ideal is riddled with tensions against a more centralized, operational approach. Against the light of the decentralized ideal, which is also promoted by EU initiatives in data ecosystems, may be too narrow for operational practice, which, after all, is where data ecosystems actually need to work and flourish.

Value

Building and engaging in data ecosystems is not an end in itself, but must ultimately answer the fundamental question—cui bono?—who generates value from them. Value, naturally, is not defined unambiguously, but is beholden to those who experience it and can quantify it. For instance, for some, this value might simply be engaging in a community, for others, it is monetary compensation, avoiding fines, and staying compliant with legislation (Jussen et al., 2024).

Value I: Public education data at the crossroads of public and private value creation—Orchestration tensions and stakeholder visions in Germany's emerging national digital education ecosystem by Konrad Degen, Rick Lutzens, Paul Beschorner, and Ulrike Lucke

Degen et al. (2025) explore an interesting domain—*education*—and report on a more visionary approach to building a national digital education ecosystem and the tensions for government orchestrators in this process. The study uses a broad range of data, including interviews, surveys, and literature, to construct a set of visions and opinions that educators have on, for example, sharing (personal) data. They propose three visions of education ecosystems.

Value II: To sell, to donate, or to barter? Value creation and capture through business model types in decentralized data ecosystems by Jana Ammann and Thomas Hess

Ammann and Hess (2025) explore two generic business model types for data ecosystems based on data spaces, derived from an in-depth qualitative interview study conducted in the context of the Catena-X Automotive Network and the Mobility Data Space. The two types—bartering and marketplace—delineate two modes of inter-organizational data sharing: one based on reciprocity without direct compensation, the other on direct data monetization through data buying and selling. The study enriches the growing body of knowledge on business models in data ecosystems with insights from two cases that are both prominent and mature.

Value III: From hesitation to participation in industrial data ecosystems—Analysis of motives and incentives in the automotive industry by Marc Brechtel

Brechtel (2025) reports on a study of incentives and motives for data sharing in the Automotive industry. The paper analyzes the Catena-X Automotive Network as a case study in a series of interviews. Among others, they find that participation in Catena-X across the supply chain depends on a number of motivational factors, such as top-line benefits or bottom-line benefits. The paper particularly makes a strong contribution to data ecosystem research as it illustrates and explores the many facets of complex interactions and their motivations in supply chains across multiple tiers.

Value IV: Understanding data collaboratives ten years after their definition—Distinctive features, impacts, and research priorities by Federico Bartolomucci and Gianluca Bresolin

Bartolomucci and Bresolin (2025) explore data collaboratives as catalysts for using data for social good. The paper examines a set of 171 data collaboratives and elaborates five categories: data-driven initiatives to support innovation, collaborative efforts for large-scale research, continuous effort to improve systemic responses, prompt response to emergencies, and International mobilization for development. The study contributes an in-depth understanding of data collaboratives as an *engine* for good. The findings highlight the heterogeneity of these initiatives, provide benchmarks for comparison, and offer insights to guide future development and research.

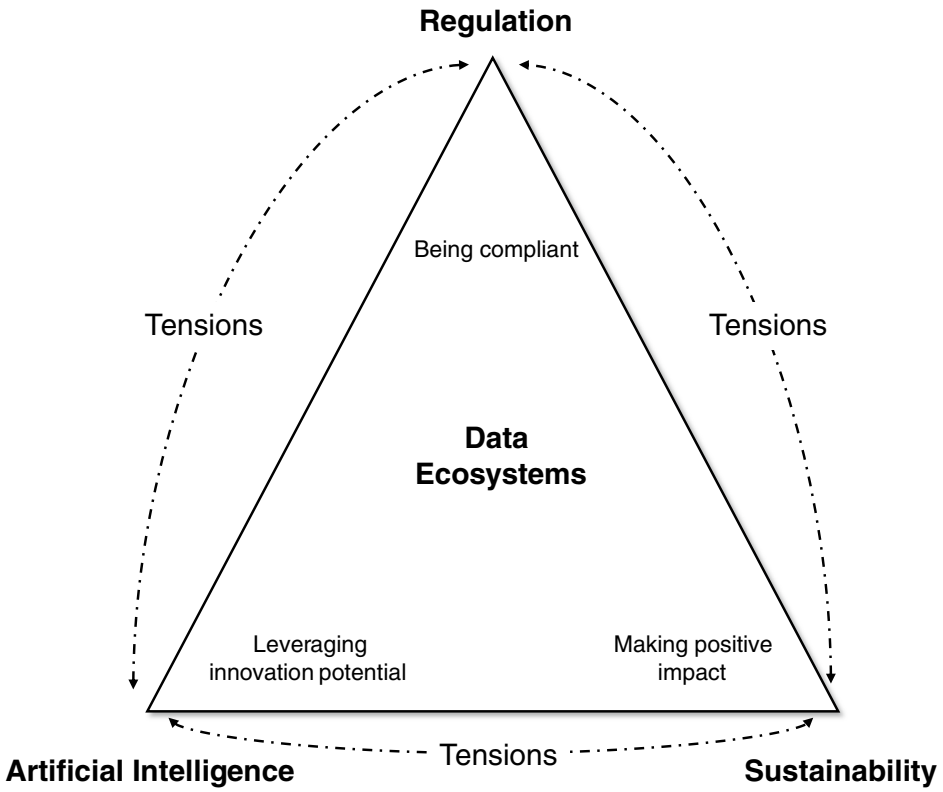

Fig. 1 Tensions in future data ecosystem research

Value V: From sharing to profiting—Exploring the interplay between value creation and strategic appropriation in data ecosystems by Jonas Nienstedt and Manuel Trenz

Nienstedt and Trenz (2025) explore the interplay of value creation and value appropriation, focusing on the reciprocal nature of data sharing between organizations. The paper draws on a qualitative case study of a health data ecosystem to generate insights about data sharing value. In particular, the paper proposes four value appropriation strategies: in selective partnering, data tailoring, benefit safeguarding, and control enforcing. The paper contributes to data ecosystem research with a distinct elaboration on the highly relevant *value* component.

The road ahead: Three avenues for data ecosystems

The field of IS research is constantly evolving, with ongoing developments around AI and the rise of data-intensive contexts creating disruptive impacts on both research and practice. So far, the road in data ecosystem research has primarily centered on three dimensions: foundation, configuration, and value. Drawing on both the papers in the special issue and our broader experience engaging with data ecosystem research, we identify three promising avenues that are likely to shape the future trajectory of the field. These avenues are distinct, as each warrants in-depth consideration, yet intertwined, as they are closely related (see Fig. 1). This is not to suggest that these frontiers are entirely new or uncharted (e.g., see Reuver et al., 2024), but we anticipate that they will further deepen and mature in the years to come.

Data ecosystems and artificial intelligence

There is no doubt that (Generative) AI profoundly impacts how we conduct research and what we study. AI and data are inextricably intertwined (Gröger, 2021), as organizations can only effectively use and build AI systems if they possess adequate data for training and operation (Banh & Strobel, 2023; Feuerriegel et al., 2023; Jakubik et al., 2024). Recent studies explicate the ongoing transformation process, and we expect a significant wave of organizational transformation toward *AI-first companies* (Davenport & Mittal, 2022). For instance, a recent IBM study finds the considerable penetration of AI tools and capabilities in organizations and highlights that 72% of CEOs say "leveraging their organization's proprietary data is key to unlocking the value of generative AI " (IBM, 2025). Subsequently, the implications for AI in data ecosystems are far-reaching. While this will increase

the need for data sharing, emerging regulatory frameworks that mandate data sharing, such as the Data Act, will make new and rich sources of data available, thereby providing the fuel for AI applications in contexts where training data are otherwise scarce. For example, in healthcare, creating data spaces enables hospitals, researchers, and policymakers to securely share and combine large volumes of clinical and operational data. This collaboration supports advanced analytics and fosters the discovery of patterns and insights that remain hidden in isolated silos. In doing so, healthcare organizations can improve diagnosis, personalize treatments, and accelerate medical innovation.

Yet, this creates a constant tension between the potential benefits—such as more sophisticated and (domain) specialized AI models and applications—and the potentially harmful consequences of misusing shared data for AI purposes. There is no shortage of literature and debate on these topics, which spans from safety risks in AI use, in particular data breaches (e.g., Daniel, 2025), to more subtle threats such as *indirect prompt injection* (e.g., inputting maliciously crafted data that directs an AI system to perform unintended actions), *hallucination*s (fabricated or non-sensical responses that are difficult to distinguish from factual information), and *jailbreaks* (attempts to circumvent in-built guardrails of AI tools through prompting) (Banh & Strobel, 2023; Russinovich et al., 2025).

For data ecosystems, where the purposeful sharing and communal use of data constitutes their lifeblood, the use of AI is likely to involve a constant struggle between exploring new business opportunities and safeguarding against an entirely new line of threats. The organizational use of AI adds further complexity, as we observe rapidly increasing innovation speeds accompanied by a growing variety and heterogeneity of AI regulations targeting both the use of data for training and AI applications (Natale et al., 2025). Moreover, the absence of clearly defined data policies poses significant risks, particularly regarding the use of shared data in AI applications. Without explicit boundaries on how data can be accessed, processed, or repurposed, organizations risk misuse, loss of trust, and violations of privacy or regulatory obligations. These policies serve as a critical governance mechanism: they specify permissible uses, ensuring that shared data is not exploited beyond its intended scope and that data owners retain control over sensitive information. Establishing such policies not only safeguards ethical and lawful AI deployment but also fosters transparency, accountability, and sustainable collaboration within data ecosystems.

Data ecosystems and sustainability

Fostering sustainability requires transparency, which can only be achieved through the collection and sharing of data across organizations and value chains (Püchel et al., 2024), thereby constituting an important new frontier for data sharing and ecosystems research. Sustainability seeks to address grand challenges, such as the transition from linear to circular economies (CE), the advancement of social good, and the protection of the environment. Achieving these goals depends on the collaboration of multiple actors and requires faithful digital representations of real-world objects and activities. For instance, *knowing* the condition of physical products and the processes that produced them is essential for generating an accurate picture of sustainability potentials and environmental footprints. The requirement to report and collect data on a vast array of sustainability-related issues, including how suppliers treat their workforce (e.g., labor conditions or salaries) and their environmental impact at a global scale (as mandated by the Supply Chain Act), poses a considerable challenge for any organization. Consequently, data and data sharing are expected to play an essential role in enabling sustainability. Yet, constructing a comprehensive picture of sustainability can also produce *unforeseen consequences* (Schoormann et al., 2025). For example, organizations in developing countries may lack the capacity to provide the required data and could ultimately be excluded from global supply chains.

What makes these frontiers interesting is that they are deeply interrelated, creating not only opportunities but also *tensions*. Take AI, for instance: It is envisioned as both a driver of drastic productivity gains and as a catalyst for more sustainable practices, yet it also consumes significant amounts of power for training and prompting (O'Donnell & Crownhart, 2025). Another example lies in the ongoing tension between regulation and the facilitation and measurement of actual sustainability impact. Legislation such as the DA directly mandates organizations to share data about connected products—an unprecedented opportunity for data ecosystem research. A previously untapped, siloed, and protected reservoir of valuable data thus becomes accessible to users of the products and to third parties acting on their behalf, enabling a new spectrum of potential business applications based on connected product data. Yet, this very expansion fuels greater energy consumption, illustrating the complex feedback loops between data-driven innovation and sustainability.

Data ecosystems and regulation

The Data Act, the Data Governance Act, or the Supply Chain Act are just a few examples of the growing body of regulations that target the use of data and AI (Pfeiffer et al., 2024). Most of these regulations require the building, use, and maintenance of a functioning data ecosystem and, in particular, call for a deeper and conjoint dual perspective from IS and law (e.g., Kurtz et al., 2025). For instance, complying

with emerging requirements under the AI Act increasingly depends on collaboration and data sharing across organizations, as companies must provide transparent and verifiable information on the data and processes underlying their AI systems. These regulations are complex, as they typically entail substantial fines in case of non-compliance, are imposed by multiple governments and jurisdictions, and prescribe what companies are permitted to do in the respective markets (Braun & Wield, 1994).

For data ecosystems, we anticipate intensifying research on cross-organizational collaborations for data sharing in compliance contexts, particularly in sustainability reporting (Schoormann et al., 2025; Wang et al., 2024). This trend has significantly gained traction with the rise of sustainability regulations, as reporting and disclosure requirements (e.g., the battery product passports) require a significant increase in industrial data sharing (e.g., Jensen et al., 2023; Ströher et al., 2025). Looking ahead, as more regulation enters into force (such as the Data Act, the Data Governance Act, or the Ecodesign for Sustainable Products Regulation), organizations need to address the *why*, *what*, and *how* of inter-organizational data sharing to ensure compliance. For instance, the Data Governance Act governs data intermediation services for data sharing, the Data Act regulates the accessibility of data, while the Ecodesign for Sustainable Products Regulation mandates that companies placing products on the market provide a digital product passport containing a wide array of consumer-accessible data. The complexity resulting from this expanding body of regulation, whether targeting technology, data (sharing), or a specific domain, presents a challenge no company can address alone. Instead, it necessitates ecosystems that collectively collect, share, and curate the necessary data.

Funding Open Access funding enabled and organized by Projekt DEAL.

Declarations

Competing interests No competing interests, no funding

References

Ackoff, R. L. (1989). From data to wisdom. *Journal of Applied Systems Analysis, 16*(1), 3–9.

Alaimo, C., & Kallinikos, J. (2021). Organizations decentered: Data objects, technology and knowledge. *Organization Science, 33*(1), 19–37. https://doi.org/10.1287/orsc.2021.1552

Alaimo, C., Kallinikos, J., & Aaltonen, A. (2020). *Chapter 9: Data and value*. Edward Elgar Publishing. https://doi.org/10.4337/9781788119986.00022

Althaus, M., Vorbohle, C., Müller, M., & Kundisch, D. (2025). Setting the stage for a flourishing cultural data ecosystem: A spotlight on business models of cultural event platforms. *Electronic Markets, 35*, 47. https://doi.org/10.1007/s12525-025-00790-y

Ammann, J., & Hess, T. (2025). To sell, to donate, or to barter? Value creation and capture through business model types in decentralized data ecosystems. *Electronic Markets, 35,* 36. https://doi.org/10.1007/s12525-025-00775-x

Banh, L., & Strobel, G. (2023). Generative artificial intelligence. *Electronic Markets, 33*, 63. https://doi.org/10.1007/s12525-023-00680-1

Bartolomucci, F., & Bresolin, G. (2025). Understanding data collaboratives ten years after their definition: Distinctive features, impacts and research priorities. *Electronic Markets, 35*, 92. https://doi.org/10.1007/s12525-025-00831-6

Braun, E., & Wield, D. (1994). Regulation as a means for the social control of technology. *Technology Analysis & Strategic Management, 6*(3), 259–272. https://doi.org/10.1080/09537329408524171

Brechtel, M. (2025). From hesitation to participation in industrial data ecosystems: Analysis of motives and incentives in the automotive industry. *Electronic Markets, 35*, 73. https://doi.org/10.1007/s12525-025-00818-3

Burmeister, F., Kurtz, C., & Schirmer, I. (2025). Governing information privacy in data ecosystems with architectural thinking. *Electronic Markets, 35*, 67. https://doi.org/10.1007/s12525-025-00808-5

Catena-X. (2024). *Landing Page of Catena-X*. https://catena-x.net/de/. Accessed 21 Nov 2025.

Daniel, L. (2025). *DeepSeek Data Leak Exposes 1 Million Sensitive Records*. https://www.forbes.com/sites/larsdaniel/2025/02/01/deepseek-data-leak-exposes--1000000-sensitive-records/?ctpv=searchpage. Accessed 21 Nov 2025.

Davenport, T. H., & Mittal, N. (2022). How companies can prepare for the coming "AI-first" world. *Strategy & Leadership, 51*(1), 26–30. https://doi.org/10.1108/SL-11-2022-0107

Degen, K., Lutzens, R., Beschorner, P., & Lucke, U. (2025). Public education data at the crossroads of public and private value creation: Orchestration tensions and stakeholder visions in Germany's emerging national digital education ecosystem. *Electronic Markets, 35*, 19. https://doi.org/10.1007/s12525-024-00752-w

Degen, K., & Teubner, T. (2024). Wallet wars or digital public infrastructure? Orchestrating a digital identity data ecosystem from a government perspective. *Electronic Markets, 34*, 50. https://doi.org/10.1007/s12525-024-00731-1

Eco, U. (1979). *A Theory of Semiotics*. *Advances in Semiotics*. Indiana University Press. https://books.google.de/books?id=BoXO4ItsuaMC. Accessed 21 Nov 2025.

Fassnacht, M., Leimstoll, J., Benz, C., Heinz, D., & Satzger, G. (2024). Data sharing practices: The interplay of data, organizational structures, and network dynamics. *Electronic Markets, 34*, 47. https://doi.org/10.1007/s12525-024-00732-0

Feuerriegel, S., Hartmann, J., Janiesch, C., & Zschech, P. (2023). Generative AI. *Business & Information Systems Engineering*. https://doi.org/10.1007/s12599-023-00834-7

Gröger, C. (2021). There is no AI without data. *Communications of the ACM, 64*(11), 98–108. https://doi.org/10.1145/3448247

IBM. (2025). *5 mindshifts to supercharge business growth: Move from productivity to performance with agentic AI* (Global C-suite Series 32nd ed). https://www.ibm.com/downloads/documents/us-en/12f5a711174dc2ac. Accessed 21 Nov 2025.

Jakubik, J., Vössing, M., Kühl, N., Walk, J., & Satzger, G. (2024). Data-centric artificial intelligence. *Business & Information Systems Engineering, 66*(4), 507–515. https://doi.org/10.1007/s12599-024-00857-8

Jarvenpaa, S. L., & Markus, M. L. (2020). Data sourcing and data partnerships: Opportunities for IS sourcing research. In R. Hirschheim, A. Heinzl, & J. Dibbern (Eds.), *Information Systems Outsourcing: The Era of Digital Transformation* (pp. 61–79). Springer International Publishing. https://doi.org/10.1007/978-3-030-45819-5_4

Jensen, S. F., Kristensen, J. H., Adamsen, S., Christensen, A., & Waehrens, B. V. (2023). Digital product passports for a circular economy: Data needs for product life cycle decision-making. *Sustainable Production and Consumption, 37*, 242–255. https://doi.org/10.1016/j.spc.2023.02.021

Jussen, I., Möller, F., Schweihoff, J., Gieß, A., Giussani, G., & Otto, B. (2024). Issues in inter-organizational data sharing: Findings from practice and research challenges. *Data & Knowledge Engineering, 150*, Article 102280. https://doi.org/10.1016/j.datak.2024.102280

Kari, A., Bellin, P., matzner, m, & Gersch, M. (2025). Governing the emergence of network-driven platform ecosystems. *Electronic Markets, 35*, 4. https://doi.org/10.1007/s12525-024-00745-9

Karst, F. S., Li, M. M., & Leimeister, J. M. (2025). SynDEc: A synthetic data ecosystem. *Electronic Markets, 35*, 7. https://doi.org/10.1007/s12525-024-00746-8

Kernstock, P., Harms, C., Hein, A., & Krcmar, H. (2025). Establishing and governing data ecosystems at the crossroads of centralization and decentralization. *Electronic Markets, 35*, 71. https://doi.org/10.1007/s12525-025-00810-x

Körner, M.-F., Leinauer, C., Ströher, T., & Strüker, J. (2025). *Digital measuring, reporting, and verification (dMRV) for decarbonization*. Advance online publication. https://doi.org/10.1007/s12599-025-00953-3

Krasikov, P., & Legner, C. (2023). Introducing a data perspective to sustainability: How companies develop data sourcing practices for sustainability initiatives. *Communications of the Association for Information Systems, 53*(1), 162–188.

Kurtz, C., Burmeister, F., Wittner, F., Jacobs, M., Semmann, M., Simon, J., Schulz, W., Schirmer, I., & Böhmann, T. (2025). *Interdisciplinary boundary spanning – Guidance for collaboration between the disciplines of information systems, law, and ethics*. Advance online publication. https://doi.org/10.1007/s12599-024-00920-4

Lefebvre, H., Krasikov, P., Legner, C., & Flourac, G. (2025). Data management as a joint value proposition—a design theory for horizontal data sharing communities. *Electronic Markets, 35*, 21. https://doi.org/10.1007/s12525-025-00755-1

Legner, C., Pentek, T., & Otto, B. (2020). Accumulating design knowledge with reference models: Insights from 12 years' research into data management. *Journal of the Association for Information Systems, 21*(3), 735–770. https://doi.org/10.17705/1jais.00618

Möller, F., Jussen, I., Springer, V., Gieß, A., Schweihoff, J. C., Gelhaar, J., Guggenberger, T., & Otto, B. (2024). Industrial data ecosystems and data spaces. *Electronic Markets, 34*, 41. https://doi.org/10.1007/s12525-024-00724-0

Natale, S., Biggio, F., Arora, P., Downey, J., Fassone, R., Grohmann, R., Guzman, A., Keightley, E., Ji, D., Obia, V., Przegalinska, A., Raman, U., Ricaurte, P., & Villanueva-Mansilla, E. (2025). Global AI cultures. *Communications of the ACM, 68*(9), 37–40. https://doi.org/10.1145/3722547

Nienstedt, J., & Trenz, M. (2025). From sharing to profiting: Exploring the interplay between value creation and strategic appropriation in data ecosystems. *Electronic Markets, 35*, 91. https://doi.org/10.1007/s12525-025-00823-6

O'Donnell, J., & Crownhart, C. (2025). Climate change and energy - We did the math on AI's energy footprint. Here's the story you haven't heard. *MIT Technology Review*. https://www.technologyreview.com/2025/05/20/1116327/ai-energy-usage-climate-footprint-big-tech/. Accessed 21 Nov 2025.

Oliveira, M. I. S., Barros Lima, Glória. de Fátima., & Farias Lóscio, B. (2019). Investigations into data ecosystems: A systematic mapping study. *Knowledge and Information Systems, 61*(2), 589–630. https://doi.org/10.1007/s10115-018-1323-6

Parmiggiani, E., Amagyei, N. K., & Kollerud, S. K. S. (2024). Data curation as anticipatory generification in data infrastructure. *European Journal of Information Systems, 33*(5), 748–767. https://doi.org/10.1080/0960085X.2023.2232333

Pfeiffer, J., Lachenmaier, J. F., Hinz, O., & van der Aalst, W. (2024). New laws and regulation. *Business & Information Systems Engineering, 66*(6), 653–666. https://doi.org/10.1007/s12599-024-00902-6

Püchel, L., Wang, C., Buhmann, K., Brandt, T., Schweinitz, F., Edinger-Schons, L. M., vom Brocke, J., Legner, C., Teracino, E., & Mardahl, T. D. (2024). On the pivotal role of data in sustainability transformations. *Business & Information Systems Engineering*. https://doi.org/10.1007/s12599-024-00904-4

Reuver, M., Ofe, H. A., Gasco-Hernandez, M., Rukanova, B., & Gil-Garcia, J. R. (2024). Data economy in a globalized world, opportunities and challenges for public and private organizations. *Electronic Markets, 34*, 53. https://doi.org/10.1007/s12525-024-00736-w

Russinovich, M., Salem, A., Zanella-Béguelin, S., & Zunger, Y. (2025). The Price of Intelligence. *Communications of the ACM, 68*(9), 46–53. https://doi.org/10.1145/3749447

Schoormann, T., Möller, F., Hoppe, C., & vom Brocke, J. (2025). Digital sustainability. *Business & Information Systems Engineering*. https://doi.org/10.1007/s12599-025-00937-3

Schweihoff, J., Lipovetskaja, A., Jussen-Lengersdorf, I., & Möller, F. (2024). Stuck in the middle with you: Conceptualizing data intermediaries and data intermediation services. *Electronic Markets, 34*, 48. https://doi.org/10.1007/s12525-024-00729-9

Ströher, T., Körner, M. -F., Paetzold, F., & Strüker, J. (2025). Bridging carbon data's organizational boundaries: Toward automated data sharing in sustainable supply chains. *Electronic Markets, 35*, 33. https://doi.org/10.1007/s12525-025-00779-7

Tansley, A. G. (1935). The use and abuse of vegetational concepts and terms. *Ecology, 16*(3), 284–307.

Tayi, G. K., & Ballou, D. P. (1998). Examining data quality. *Communications of the ACM, 41*(2), 54–57. https://doi.org/10.1145/269012.269021

Toorajipour, R., Oghazi, P., & Palmié, M. (2024). Data ecosystem business models: Value propositions and value capture with Artificial Intelligence of Things. *International Journal of Information Management, 78*, Article 102804. https://doi.org/10.1016/j.ijinfomgt.2024.102804

Wang, J., Teracino, E., & Legner, C. (2024). Towards data management for navigating the dynamic landscape of sustainability regulations and standards. *Proceedings of the 45th International Conference on Information Systems,* Bangkok: Thailand.