

Europe in the Global Data Economy



Sharing as a Culture Worth Promoting

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1 Data spaces and data sharing as cornerstones of the European Data Strategy

Only innovations can secure the long-term competitiveness of economies and increase prosperity in society. The engine for these innovations – and thus for the desired growth and prosperity – increasingly lies not in material goods, but in the digital space: "smart" services and digital platform technologies are already far outperforming traditional business models¹ in terms of profit margins, growth rates and scalability.

It has long been clear that data plays a central role in digital innovation. It is the source of services that lead to greater productivity in manufacturing, better healthcare, and cleaner cities, to name just a few examples. Nevertheless, the European Data Strategy² already established four years ago that 80 per cent of data remains unused. This data never flows into the so-called data value chain, i.e. the digital centerpiece for innovation. There are many reasons for this: data that is not stored in the cloud is difficult to access. There is also often a lack of interoperability or the data owner is simply reluctant to share their data. The European Data Strategy therefore proposes a regulatory framework for a fair data economy in the European Single Market and promotes data-based innovation, which is primarily created by sharing data in ecosystems based on shared European data spaces.³

With the entry into force of numerous legal provisions such as the Data Governance Act (DGA) and the Data Act (DA), the implementation of the European Data Strategy is now in full swing. Over a hundred data space initiatives have been established or are already up and running. The European Data Innovation Board (EDIB), with the help of the EU Data Spaces Support Centre (DSSC), is ensuring the implementation of the required legal framework throughout the Union and the interoperability of data spaces. In the meantime, a large community has formed to jointly create data spaces. These include independent, non-profit industry associations such as Gaia-X⁴ and the International Data Spaces Association⁵, projects funded under the Digital Europe Program or through member state instruments, and a third group of industry-led initiatives such as Catena-X⁶ and Eona-X⁷ in the automotive and tourism sectors respectively. In addition, the European approach to the data economy has also attracted interest and attention abroad, for example in China, Japan and the USA.

Today, we can say that much has already been achieved in the European Union on the way to a fair data economy. However, since its beginnings, the world has moved on and both the environment and Europe itself have changed. This requires an adaptation of the European Data Strategy to these new internal realities and priorities.

For example, the geopolitical and industrial tensions between different economic areas of the world and international multi-polarity emphasize the need for strategic autonomy⁸ in Europe in the sense that Europe should reduce its dependence on others by strengthening its own digital capabilities and broadening its economic relations. Europe should prioritize what is sometimes referred to as "economic security".

In addition, digital technologies in the field of generative artificial intelligence bring with them numerous opportunities for progress, but also challenges. The underlying foundation models⁹ require enormous amounts of computing power, access to large data sets, sufficiently well-trained specialists, and efficient administrative processes when it comes to public procurement, for example. Europe must take care not to fall behind, but to maintain or even increase the speed of implementation and thus shorten the time to amortization of its investments.

2 The role of data in the development of the European Single Market

Europe has already taken action: The European Council, for instance, has commissioned an independent expert assessment on the future of the single market. In his report, former Italian Prime Minister Enrico Letta, who was entrusted with this task, emphasizes the need to create a "fifth freedom to enhance research, innovation and education in the single market".¹⁰

According to the report, the European Union has implemented extensive regulations for the digital sector, thereby avoiding the potential fragmentation that would have resulted from individual member states introducing their own regulations. This counteracts an increasing dependence on third parties. However, relying solely on this comprehensive set of rules has proven insufficient "for nurturing the level of innovation necessary to realize our goals. Currently, the European Union holds a vast but underutilized pool of data, expertise and startups. Without full utilization, there's a risk that this wealth of resources could end up benefiting other global entities better positioned to capitalize on it and hamper our strategic autonomy and economic security"¹¹.

In addition to the four fundamental freedoms of the European Single Market, i.e. the movement of goods, services, people and capital, "the fifth freedom of movement will cover a number of areas, including research, innovation, data, skills, knowledge and education"¹².

Enrico Letta emphasizes the fundamental role that data and the data sharing ecosystem must play in the future of the single market. This is a timely call, as other economic regions around the world are currently developing similar strategies to capitalize on the enormous opportunities data offers for growth

and prosperity. China, for example, has recently established a National Data Bureau tasked with "promoting the development of basic data-related institutions, coordinating the integration, sharing, development and application of data resources, and promoting the planning and construction of a digital China, a digital economy and a digital society".¹³

3 Six suggestions for the next five years

Once in office, the new European Commission will need to build on the foundations laid in recent years to implement the EU Data Strategy. However, it will also have to move into new areas and further develop the strategy. In doing so, the Commission should focus on six strategic priorities:

3.1 Looking beyond European borders

The first version of the European Data Strategy focused mainly on the single market. It identified its own strengths and set out what Europe should do in the single market. Future guidelines should be explicitly expanded to include interaction with other economic areas, as many European industries have intensive trade relations with other parts of the world. For this reason, cross-border data sharing should play a greater role in the future, as supply chains are global and require not only the cross-border exchange of physical goods, but also of data. Europe should promote standards for the exchange and sovereignty of data based on the data space concept to organize international data exchange according to its own values and norms.

3.2 Open, quality-orientated foundation models

Generative AI is based on foundation models, which often take the form of large language models. They are mainly based on publicly available data, the quality of which is not guaranteed. In fact, enormous computing power is used to create and train models from "readily available" data, rather than from data that in many cases would be desirable and quality assured. As often mentioned, European companies still have a wealth of data at their disposal, much of which remains unutilized. The foundation models could be significantly enriched if access to high-quality - and valuable - data were possible during the creation and fine-tuning, i.e. the customization of the foundation models to specific model requirements. If this valuable data resource is to be utilized, trust and thus ensuring data sovereignty¹⁴ is essential, for example through data space technology. In addition, Europe should utilize the strengths it has acquired in recent years, such as HPC clusters, to provide the necessary resources for the development of its own foundation models.

3.3 Sharing data for multilateral use cases

Data exchange and data sharing are often mistakenly regarded as synonyms. Data sharing is based on the assumption of utilizing data from different sources in multilateral forms of cooperation. Real innovation occurs when data from different companies is combined with (often openly available) context data and customer data. The use cases of multilateral data sharing also have real growth potential because they address completely new business models in contrast to conventional, productivity-oriented use cases.¹⁵

3.4 Open source and standardization

"Whoever sets the standard controls the economy" always applies, even in the data economy. Open source software developments such as FIWARE¹⁶ and the Eclipse Data Space Components project¹⁷ utilize the "power of the community" and are widely accepted thanks to their open development process. Additionally, there is often a close connection between open source communities and formal standardization organizations. The Eclipse Foundation, for example, maintains a Category A connection to the relevant ISO technical committee. This enables fast and smooth cooperation with standardization activities at international level.

3.5 Platform economy

Data spaces are based on a distributed architectural design that distinguishes them from conventional monolithic data platforms. It is of enormous importance to understand this difference on a technical level. It is at least as important to recognize that, from an economic perspective, data spaces are considered platforms to which the principles of platform economics naturally apply. Network effects are triggered when they are simulated. Many data initiatives must therefore now step on the gas to generate a critical mass of data, participants and services and utilize the effects of multi-sided markets.¹⁸ In addition, politics and business should already be focusing on the economic and commercial benefits of data sharing, as technological developments are already converging and enabling technologies are maturing. Furthermore, incentives should be created for all stakeholders to join forces and jointly develop and use data infrastructures instead of finding themselves in a competition of marginalized solutions that ultimately makes everyone a loser.¹⁹

3.6 Automated compliance

In addition to innovation through data spaces, the European Data Strategy focuses on the creation of a legal framework that reflects European values in the data economy and defines the "rules of the game" in the European Single Market. This regulation is necessary for reasons of amortization time and acceptance. However, it must not become an obstacle on Europe's path to a data economy. Regulation must, therefore, always go hand in hand with technological development, making it as easy as possible for those affected to comply with legal provisions. The development of standards and automated compliance are promising research and development programs that must be promoted and supported.

4 From common European values to a culture of data sharing

There has long been a consensus in management theory that strategy is a mandatory prerequisite for success, while culture is a sufficient prerequisite. This is also the reason why the colloquial phrase "culture eats strategy for breakfast" is so widely used in organizations around the world. This could also be a guiding principle for the future development of Europe's efforts towards a fair data economy.

As Europe increasingly developed from a purely economic union into a political community from the 1950s onwards, it essentially defined itself as a community of values in terms of human rights, the rule of law and democracy. For a long time, however, these values were viewed independently of cultural issues. The French political scientist Olivier Roy, for example, states in his recent article in *Le Grand Continent*: "The founding texts of European integration are based on an explicit decoupling of value and culture: values are universal, cultures are national"²⁰. He also asked: "If values are not anchored in a common imagination, in a common culture, how can we put them into practice?"

This analysis can be translated for the data economy as a call to further strengthen the role of Europe by utilizing the widely accepted understanding of the power of European values for a culture of data sharing. While values manifest themselves in norms, institutions and legal frameworks, culture becomes visible and tangible when economic actors interact. This also applies in the case of data. European data regulation represents what Europe considers to be the rules of the game for a fair data economy, i.e. its values. Innovation from data through to data sharing based on a common European data space requires not only common values, but also a common culture - a culture of data sharing to be precise. Establishing a true culture of data sharing is a promising way to fulfill Enrico Letta's call for a fifth freedom of movement around data and knowledge.²¹

Six basic principles can show the way:

1. Data is shared within partner ecosystems based on the fifth freedom of movement proposed by Enrico Letta.
2. Data sovereignty and trust between the partners in the ecosystem are guaranteed by a trust framework that is based on European values but is open for global use.
3. Data spaces are set up and managed jointly by the ecosystem partners. They do not require proprietary mediation services and governance arrangements or the consolidation of data in a single physical location.
4. Sharing data is encouraged as it is a prerequisite for tackling common challenges such as global warming.
5. Economic aspects of data sharing provide an effective framework for understanding how fair and transparent value creation is made possible in data spaces.
6. In addition to private and public data, shared data assets²² are developing as a driver of innovation. They are an important asset for the foundation models of AI.

Europe should build on what has been achieved in the data economy in recent years and set the right priorities to take the Data Strategy to the next level and capitalize on the innovation opportunities inherent in the data economy. The data economy could be the first step in demonstrating the value of its fifth freedom and fostering a new culture of data sharing.

Endnotes

- 1 Companies that use the "pipeline" model create value by controlling a linear series of activities, the traditional value chain model. The input factors at the beginning of the chain (e.g. raw materials and components from suppliers) go through a series of manufacturing steps that transform them into a higher-value product: the final product. According to van Alstyne, Parker & Choudary (2016) in their article in the Harvard Business Review, the transition from pipelines to platforms means three crucial changes: firstly, from resource control to resource orchestration; secondly, from internal optimization to external interaction; and thirdly, from an emphasis on customer value to an emphasis on ecosystem value.
- 2 The European Data Strategy, published on 19 February 2020, aims to make the EU a leading force in a data-driven society. By creating a Single Market for data, it will be able to circulate freely within the EU and between sectors, benefiting businesses, researchers and public administrations (European Commission, 2020).
- 3 According to the EU Data Space Support Centre, a data space is a "distributed system defined within a governance framework that enables secure and trustworthy data transactions between participants while ensuring trust in and sovereignty over data" (EU DSSC, 2024).
- 4 See: <https://gaia-x.eu/>.
- 5 See: <https://internationaldataspaces.org/>.
- 6 See: <https://catena-x.net/en/>.
- 7 See: <https://eona-x.eu/>.
- 8 In an earlier article entitled "Digital sovereignty, European strength and the data and cloud economy in varietate concordia", the authors addressed the fact that strategic autonomy is no longer only used in the context of defence strategies, but also includes the economy, the energy sector and the digital world (Tardieu & Otto, 2021).
- 9 According to the Center for Research on Foundation Models at Stanford University, "a foundation model is a model that is trained on large amounts of data (usually using large-scale introspection) and can be adapted for a wide range of downstream tasks" (Center for Research on Foundation Models (CRFM), 2021).
- 10 Letta, 2024.
- 11 Letta, 2024.
- 12 Letta, 2024.
- 13 CGTN 2023 and China has recognized data as the fifth factor of production after land, labour, capital and technology (CGTN, 2023).
- 14 While digital sovereignty is often discussed from a geopolitical perspective and focuses on the question of where (cloud) IT resources are located and where the associated service providers have jurisdiction, data sovereignty is more specific, as it concerns the "ability of individuals, organization and governments to control and exercise their rights over their data, including its collection, storage, sharing and use by others (EU DSSC, 2024)."
- 15 Data sharing is at the heart of what economists call multi-sided markets. A good example is Skywise (see <https://aircraft.airbus.com/en/services/enhance/skywise/skywise-solutions>). Airbus provides its customers (such as EasyJet) with industry data on aircraft ("as designed" and "as manufactured"). In return, EasyJet shares operational and flight data ("as operated"). The combination and analysis of these shared data re-sources then enables intelligent maintenance scenarios that lead to higher utilization of the facilities, to new service models, in short: to a win-win situation for both sides.
- 16 See: <https://www.fiware.org/>.
- 17 The EDC project is linked to the Eclipse Data Space Working Group, which is intended to coordinate various OSS data space projects (<https://projects.eclipse.org/projects/technology.edc> and <https://www.eclipse.org/org/workinggroups/dataspace-charter.php>, accessed 12/06/2024).
- 18 See the example of Skywise.
- 19 The Gaia-X Institute and the University of Paris Dauphine recently published a position paper on economic aspects of data sharing, see Brousseau, Eustache, & Toledano, 2024.
- 20 Roy, 2024.
- 21 See chapter 2.
- 22 Much can be taken from Ostrom's fundamental work on the management of commons. (1990).

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