

Data cooperatives: a new data governance paradigm in the era of the platform economy

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Foreword

In the age of the digital revolution, data has become the nerve centre of the global economy, fuelling the training of complex algorithms, the automation of services and the development of artificial intelligence. In a landscape where information is an instrument of commercial, political and social power, the need arises to question whether current forms of data and information management are capable of guaranteeing the redistribution of the benefits they generate.

The social economy can therefore once again serve as a place of inspiration and experimentation in which to test new processes, organisational forms and solutions – precisely because, in this context, alternatives to dominant paradigms have emerged before: to the industrial paradigm in the past, and to the digital one today.

This is why, in a world characterised by what has been termed platform capitalism – one that increasingly takes on the features of a technological oligarchy – it is imperative to think of alternatives, and it is natural to look for them where otherness has already flourished in the past.

Although data cooperatives (or datacoops) are struggling to establish themselves as a new model of data governance, it is important to continue the reflection already begun in other contexts, and to add elements that help make the concept more real every day.

The aim of this report is therefore not to offer exhaustive answers to the debate on the purposes and operational scope of data cooperatives, but rather to provide a synthesis of the current debate, so that those approaching the subject for the first time can understand it. At the same time, the report aims to contribute new elements to the debate by providing high-level operational tools to support interested parties in an initial assessment of the opportunity and viability of implementing the datacoop concept in their own context.

Chapters 1 and 2 therefore offer an overview of the current concept of the datacoop and its level of development, while chapter 3 presents and proposes an operational tool enabling those interested to assess whether developing a datacoop is opportune.

1. Introduction to the concept of the data cooperative

The cooperative concept constitutes a profound critical reaction to the current digital economy paradigm, often described by the expression “*platform capitalism*”, characterised by a massive concentration of power in the hands of a few large technology companies. To justify the extraction and monetisation of personal data, the tech industry has long promoted the metaphor that “data is the new oil” of the 21st century, presenting it as an inert resource waiting to be extracted. More recent schools of thought, however, forcefully reject this extractivist vision, arguing that data is not a natural phenomenon but the product of collective labour, and that it acquires value precisely by virtue of its relational and temporal dimension.

Treating data as an exclusive good is therefore a conceptual and legal fiction that does not reflect the collective nature of data, which by its very nature requires decentralised and pluralistic forms of governance. In today’s context, marked by a growing crisis of trust exacerbated by global emergencies, the democratic governance of information flows is no longer merely a technical or managerial matter: it becomes an essential precondition for social justice and for building a genuinely human-centric digital ecosystem.

Data cooperatives thus emerge as a natural evolution of “platform cooperativism”, a movement that aims to replace the hegemony of multinationals – and the concentration of power deriving from exclusive access to information – with democratic alternatives designed to return control to the community.

Although the first specific academic conceptualisations of the term are often traced back to scholars such as Alex Pentland of MIT, the phenomenon sits within the historical tradition of associationism. In *Building the New Economy: Data as Capital* (Pentland, 2021), a foundational work for the concept of the data cooperative, Pentland and MIT researchers draw a rigorous parallel between the structural inequalities that emerged during the Industrial Revolution and those of today’s digital era. Just as, between the late 19th and early 20th centuries, the concentration of industrial wealth led citizens to invent new collective fiduciary architectures – such as trade unions and cooperative credit banks – to pool savings and protect themselves from monopolies, today’s digital economy faces an analogous monopolistic crisis, exacerbated by the spread of Artificial Intelligence.

One example of a datacoop is **Driver’s Seat**, a data cooperative that enables drivers on ride-sharing platforms to pool data on their routes and journey times. Through the collective analysis of this information, workers can optimise their strategies, maximise their earnings and regain effective control over their work performance, partly neutralising the information asymmetry imposed by the algorithms of multinational platforms. This action challenges the informational monopoly of the large platforms and the unilateral decision-making that derives from it.

From this perspective, information takes on the same strategic role that money and labour held in the past: in today's economy, data is the new primary asset to be defended and pooled. Data generated by users is no longer seen as mere digital waste to be extracted; it fully represents the new capital and the fruit of the community's 'digital labour'. Just as cooperative credit banks operate under a fiduciary obligation towards their members to protect their financial deposits, data cooperatives are created to act as fiduciary intermediaries entrusted with protecting and adding value to the community's data 'deposits'. The data cooperative is thus an expression of the interests of its members, towards whom it holds a legal and moral obligation to act solely in their interest.

Initially only conceptualised by a handful of scholars, the concept of the data cooperative gained relevance and attention following its introduction in European Regulation (EU) 2022/868, better known as the Data Governance Act (DGA). In Article 2(15), the DGA includes 'data cooperative services' among those that can be provided as data intermediation services. While it does not specifically define the concept of the data cooperative, the DGA has rekindled interest in the subject, sparking a multidisciplinary debate spanning legal, organisational, technological and business aspects. Many have already recognised the DGA's shortcomings in sketching out the concept without clearly defining its operational and legal scope, leaving ample room for interpretation – an element that has hindered, and probably obstructed, the spread of data cooperatives in recent years (Bravo, 2024). Nevertheless, academics and practitioners alike agree on the importance of the European legislator's recognition of data cooperatives as a functional and necessary element for implementing new data-sharing models based on data altruism.

1.1 Definition and core values underpinning the concept of the data cooperative

A data cooperative can be broadly defined as ***“an organisation owned by its members and democratically governed, in which individuals voluntarily pool their data for mutual benefit while retaining control over it.”*** (Mendonça, 2025)

The central elements of this model are therefore the democratic nature of its governance, the voluntary nature of membership, control over data, and mutual purposes – values that mirror the principles of the International Cooperative Alliance (ICA).

When translated into the context of the data economy, these principles convey the innovative value of the data cooperative concept compared to the predominant model, and thus express – in their very articulation – the scale of the change that introducing such organisational models could represent. The following table applies and summarises the ICA cooperative principles within the data economy and highlights their contrast with the predominant model; each is discussed below.

Cooperative principles (from the ICA)	Application in the data economy	Predominant model in the data economy
Voluntary and open membership	Members can withdraw their data without artificial barriers.	Licence-withdrawal options are often difficult to navigate and imply losing access to the service.
Democratic member control	Decisions on data use are taken collectively.	Control is centralised and those directly concerned have no decision-making power.
Economic participation	The value and benefits deriving from the use of data are redistributed among the cooperative's members.	Value is centralised or shared through quid-pro-quo logics (e.g. free access).
Autonomy and independence	Decision-making autonomy and independence regarding data uses are maintained.	Inability to understand how one's data is used.
Education, training and information	Proactive role in building data literacy among members.	Artificial opacity about how providers use users' data.
Cooperation among cooperatives	Interoperability and federated sharing as goals to maximise the (economic and social) value generated through data.	Exclusive access to data as an element of market competition.
Concern for community	Orientation towards sustainable development and the wellbeing of the wider community.	Focus on shareholders and investors.

[Figure 1 – Cooperative principles applied to the data economy]

Voluntary and open membership: In the dominant platform-economy model, the right to withdraw one's data is formally recognised but effectively emptied of meaning through mechanisms that make exit costly for the user – typically the loss of services, or technical barriers that make data portability impracticable in practice. In data cooperatives, withdrawal is not a nominal right but a structural guarantee, embedded in the architecture of data governance. This means the relationship between the individual and the data system is genuinely consensual and reversible, not bound by artificial dependencies.

Democratic member control: While in the predominant model the user is often unaware of how their data is actually used, in the cooperative model the collective governance of data use is a founding principle. Decisions are taken through democratic processes in which every member has the right to participate. This is not a mere organisational preference but a profound realignment of power relations in

the digital economy, which challenges the assumption that data can be controlled by the individual alone in favour of a vision of data as a shared good that must be managed as such.

Economic participation: The cooperative principle of economic participation challenges the prevailing platform-economy model, which rests on a structural asymmetry whereby the value generated by data flows entirely to the platforms that manage it. By contrast, the cooperative form requires that the benefits deriving from data use be redistributed among the members who helped generate them. Rather than offering free access as a form of compensation – a quid pro quo that conceals the underlying commercial transaction – the data cooperative makes the underlying economic relationship transparent and fair. Data is no longer treated as a raw material to be extracted, but as a shared good whose value belongs to those who produced it.

Autonomy and independence: The cooperative principle of autonomy and independence requires data governance to respect and strengthen members' decision-making capacity rather than erode it. In the data economy, this means designing systems that do not steer, manipulate, or constrain users, but foster genuine freedom of action. The shift from a model that exploits data to consolidate platform power to one that uses data governance to protect members' autonomy represents a profound realignment of the relationship between technology and human agency. The cooperative does not own the data: it manages it on behalf of its members, who remain in control of their own data.

Education, training and information: Under the cooperative principle of education, training and information, the organisation commits to training its members, enabling them to participate knowingly in decisions rather than merely consenting to terms they cannot understand. This makes cooperatives mechanisms for promoting data literacy – the ability of individuals to participate consciously and, above all, critically in data management – a fundamental element for achieving widespread digital sovereignty.

Cooperation among cooperatives: In the platform economy, data is deliberately kept in silos; artificially generated exclusivity of access is a competitive asset. The principle of cooperation among cooperatives points in the opposite direction, treating interoperability and federated data sharing as strategic goals necessary to maximise the economic and social value of data. This redefines competition itself: rather than winning by excluding others, cooperative data organisations generate value by collaborating with one another – an approach in line with the collaborative nature of data, a resource whose value grows the more it is combined with other data (Nikander, 2020).

Concern for community: Under this principle, the organisation is accountable not only to its members but to the society in which it operates in the broadest sense. In the data economy, this means that decisions on data use must be assessed against criteria of collective wellbeing, repositioning data as a resource at the service of the

common good. This principle thus invites us to regard data as a collective good and to act through it in the community's interest.

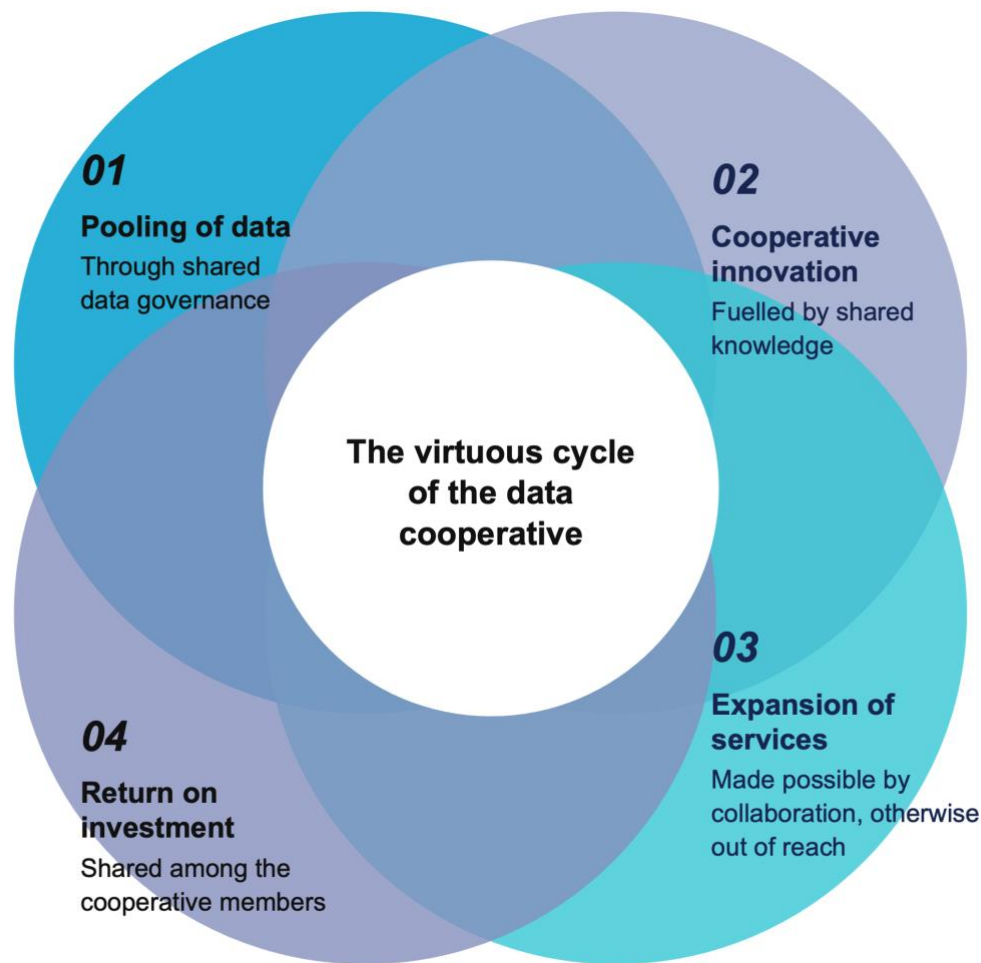
1.1.1 The generation and redistribution of value

The community vocation intrinsic to the data cooperative concept aligns it structurally with the principles of the Social and Solidarity Economy recognised by the United Nations, which prioritise social utility and the primacy of people over capital in the distribution of value. This is one more reason why data cooperatives sit at the centre of the debate on how the social economy can help make today's economic system more inclusive. They constitute a form of digital mutualism – a paradigm aimed at promoting inclusive digital innovation, reinforcing mutualism as a form of economic and societal growth, and digitalisation as a form of social progress and community development.

Operationally, data cooperatives provide a wide range of services that the DGA places within the broader category of data intermediation services. This definition identifies three fundamental lines of intervention:

- **Supporting members in exercising their data rights.** The cooperative assists members (whether natural persons, sole traders or SMEs) so that they can make fully informed choices before consenting to the processing of personal data or authorising the processing of non-personal data. This service addresses the need to close the information asymmetry that characterises relationships between individuals and large digital platforms, which have traditionally operated with limited transparency and accountability in their use of data. In this context the cooperative takes on a fiduciary duty towards its members, which entails an obligation to act in their best interest, to prioritise their needs, and to ensure transparency and accountability in all data-related activities.
- **Promoting internal deliberation among the cooperative's members.** Through the exchange of views on the purposes and conditions of data processing, the cooperative operates as a deliberative space in which members can discuss and agree on the forms of use that best represent their collective interests.
- **Negotiating function.** The cooperative negotiates, on its members' behalf, the contractual terms and conditions for data processing with third parties, before authorisation is granted for the processing of non-personal data or consent is given for the processing of personal data. In this way, the cooperative leverages its members' collective bargaining power to secure more favourable conditions than an individual could negotiate alone, influencing the terms set by data-user organisations and offering its members better choices.

The activation of this matrix of values triggers what the literature calls the "virtuous cycle" of data cooperatives (Bühler, 2023a). This model unfolds in four phases, shown in the following figure.



[Figure 2 – The four phases of the virtuous cycle of data cooperatives.]

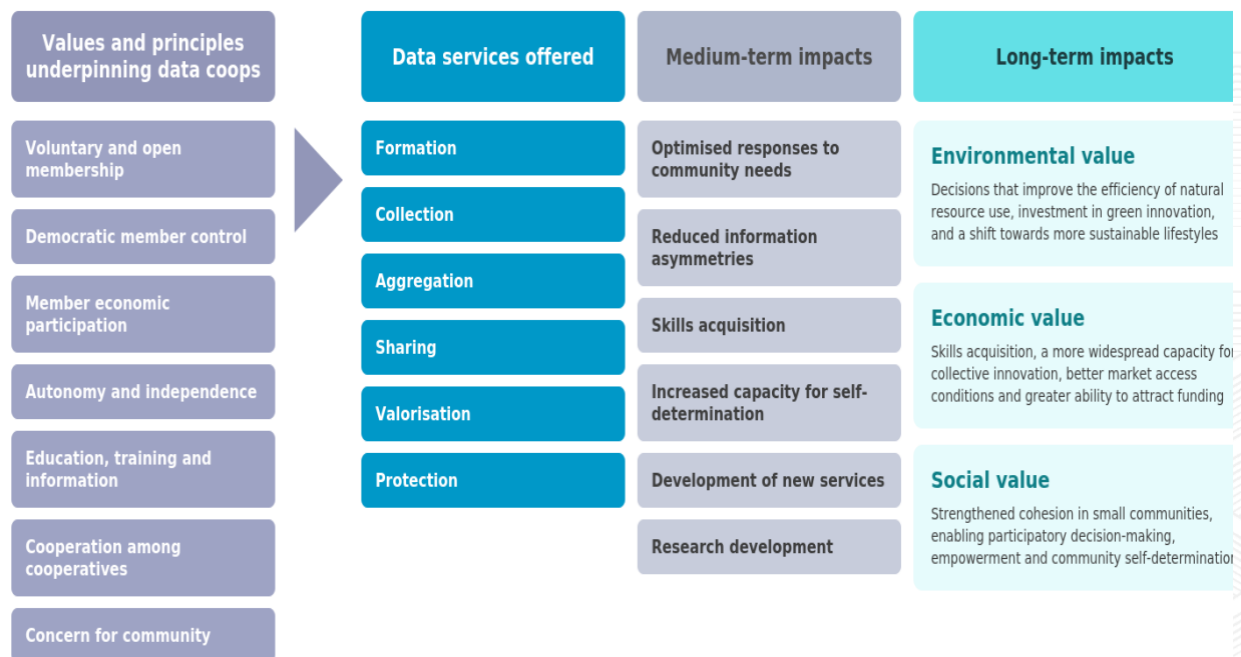
First of all, the data cooperative ensures that the value extracted from data is not privatised but fairly redistributed and reinvested in the community (phase 1), supporting inclusive and sustainable growth practices. Through services for collecting, aggregating, adding value to, sharing and protecting data, data cooperatives do not merely play a defensive role against capitalist extraction: they act as genuine collaborative ecosystems in which members actively co-create new services. Data thus becomes an instrument of participatory innovation (phase 2) and a form of expression and inclusion in innovation processes. It generates new opportunities and thereby enables the expansion of the services offered (phase 3).

Thanks to the benefits of such innovations and the resulting value creation, data cooperatives come to generate different forms of return (phase 4), which can be described respectively as instantaneous (or transitory), instrumental and potential value. **'Instantaneous value'** refers to the ability to optimise responses to community needs in real time and to reduce information asymmetries in markets. **'Instrumental value'** refers to the community's capacity for self-determination through the acquisition of new skills and sovereignty over its own data. In parallel, the long-term

storage and analysis of shared data generate '**potential value**', by acting as an engine for innovation, research and the development of new services.

Through the realisation of these values, data cooperatives become generators of economic, social and environmental impacts. In terms of **economic impacts**, data cooperatives generate skills acquisition, a more widespread capacity for collective innovation, better market-access conditions and a greater ability to attract funding. In terms of social impacts, they strengthen the sense of cohesion in small communities, enable participatory decision-making, and foster community empowerment and self-determination. In terms of **environmental impacts**, data cooperatives can support decision-making for more efficient use of natural resources, investment in green innovation, and behavioural change towards more sustainable lifestyles.

It is therefore possible to outline a value chain generated by data cooperatives which, starting from cooperative values, leads to the realisation of medium- and long-term impacts. This is summarised in the following figure.



[Figure 3 – The Data Coop value chain]

1.1.2 Key concepts for data coops

Fundamental concepts for fully understanding the evolution of the debate on new data governance paradigms – and the role data coops can play – are data sovereignty, data literacy, data stewardship, data altruism and data intermediation.

The principle of **data sovereignty** asserts the inalienable right of individuals and communities to exercise control, management and protection of their own information, in accordance with their ethical values and jurisdictions. In the academic debate, data sovereignty is conceived as a socio-political digital right

essential for self-determination. Promoting data sovereignty through cooperatives is regarded as an act of resistance against data “colonialism” – an asymmetric dynamic in which external entities extract value from citizens’ data for purely capitalist ends, often to the detriment of local communities or countries of the Global South (Calzada, 2021).

The concept of **data literacy** implies, first and foremost, individuals’ capacity to understand the uses and value of their data, alongside the risks they run in sharing it. But it goes further: it promotes the development of a critical consciousness about data, enabling people to act knowingly on their data to their own advantage and to appreciate its social, political and material value (D’Ignazio, 2017).

The concept of **data stewardship** refers to the idea that the data cooperative safeguards its members’ data, defends their interests and facilitates its collaborative use, without ever becoming its owner. This implies that individual members always retain the option to withdraw their data from the cooperative, or simply to prohibit its use even for a single instance. The data cooperative therefore does not own the data: it is a trusted entity that manages it. Trust thus becomes not merely a relational sentiment but the founding mechanism of the cooperative, which is obliged to act in its members’ best interest, transparently and loyally (Verhulst, 2022).

The concept of **data altruism**, as defined by the DGA, refers to the opportunity to use data for altruistic and solidarity-based purposes. It rests on the notions of voluntariness, gratuitousness and general interest. In the case of data cooperatives, it implies that members may join not only to protect their privacy or for economic returns, but also for altruistic purposes. Operationally, this translates into making data available in areas of general interest such as healthcare, the fight against climate change, improving mobility, facilitating the development, production and dissemination of official statistics, improving public service delivery, public policy-making, or scientific research in the general interest (Ansah, 2024).

One example of a data cooperative embodying these values is Spain’s **Salus.coop**. It has demonstrated that it is possible to aggregate vital information (clinical and lifestyle data) for medical research without transferring identifiable personal data, using ethical licences (the Common Good Data Sharing License) and cryptographic technologies at the service of medical research.

The concept of **data intermediation**, as defined by the DGA, identifies services that aim to establish – through technical, legal or organisational means – relationships between data holders on the one hand and data users on the other, including for the purpose of exercising data subjects’ rights in relation to personal data or for commercial purposes. Fundamental to the concept of data intermediation is the principle of neutrality, which ensures that the intermediary cannot itself use the data for purposes other than intermediation. Providers of intermediation services must therefore act exclusively as intermediaries, and nothing more, since under no circumstances may they use the data exchanged.

These concepts, often promoted as independent of one another, are in fact deeply interrelated and – as discussed above with reference to the cooperative principles – intrinsic to the cooperative nature of data cooperatives, which constitute a natural solution for redefining the logics through which data is shared and exploited.

1.1.3 Differences from other forms of data sharing

So far we have mainly discussed data cooperatives. In reality, the growing importance of data in today's innovation landscape, together with awareness of its usefulness for social purposes, has led to the proliferation of various organisational forms for data sharing. It is therefore useful to distinguish between them, so as not to confuse their purposes and to be able to choose among them according to one's goals and needs.

First of all, it is useful to distinguish between an open data approach and all other forms of data aggregation and sharing. While the open data concept promotes the publication of data for any use, by anyone (thus also allowing its use for private purposes), other forms of data sharing provide alternative solutions that regulate data use more or less strictly and, in many cases, operate through forms of "data intermediation". Organisations providing data intermediation services offer an organisational, technical and legal structure designed to manage and distribute information exclusively on behalf of and in the interest of their members, curbing uncompensated extraction and, with it, the risks arising from malicious uses of data. Among the forms of sharing that are gaining ground are data trusts, data commons, data unions, data spaces and data collaboratives. These are not variants of a single model, but fundamentally different answers to the questions: who decides on data use? In whose favour? With what incentive structure?

To facilitate the making of a clearer distinction between these models, the following table (adapted from Bühler, 2023b) provides a concise comparative description, which is then discussed and elaborated below.

Model	Purpose	Ownership/ Control	Governance Model	Focus	Data Sovereignty	Membership/ Participation
Data Cooperative	Collective benefit, empowerment, ethical use of data.	Members retain ownership of the data; control is collective.	Democratic and direct, member-led, following the "one member, one vote" principle.	Internal governance, data sovereignty, fair use of data among members, and redistribution of digital power.	Members maintain control over their data and decide its use.	Voluntary, based on defined criteria.
Data Trust	Protection of data rights, ensuring responsible use for a specific purpose.	A trustee holds legal ownership and manages data on behalf of beneficiaries.	Fiduciary management, guided by the trust's founding charter; trustees are not necessarily controlled by the subjects.	Responsible and secure data management; providing a rigid infrastructure to protect interests.	Individuals relinquish part of their control to gain legal protection. Management is based on trust.	Beneficiaries defined in the trust's deed of establishment.

Data Commons	Promotion of shared knowledge, community research, and development without misappropriation.	Managed by the community; resources are shared.	Shared governance, community-defined rules, based on principles of collaboration and openness.	Fair access, collaborative use of data.	Aims for high individual sovereignty. The model centers on collective accessibility.	Open to the community, governed by shared access criteria for common enrichment.
Data Unions	Maximizing individual economic and contractual returns derived from sharing.	Pooling for negotiation; individual ownership varies.	Collective bargaining.	External negotiations to secure better conditions on data.	Members maintain a certain level of control. The focus is on external conditions.	Voluntary, often centered around shared needs/interests or category membership.
Data Spaces	Maximizing data sharing primarily for commercial and innovation purposes.	The data holder transfers usage rights following a contractual agreement.	Centralized regarding infrastructure; decentralized regarding data.	Data commercialization.	Members are free to decide on data-sharing conditions and can transfer their rights.	Voluntary.
Data Collaborative	Data sharing for altruistic purposes, research, innovation, and emergency response.	Data is shared with users bound to a defined use.	Generally mediated by an organization subject to democratic control.	Generating social impact.	Members transfer rights strictly bound to the altruistic use of the data.	Voluntary and subject to approval by other members.

[Figure 4 – Distinguishing features of the different forms of data intermediation.]

As summarised in the table, forms of data intermediation can pursue different objectives. Specifically:

- **Data trusts:** The data trust is based on a mechanism of formalised delegation. The individual transfers control over their data to a trustee – a natural person or an entity – who manages it in the interest of the beneficiaries defined in the founding deed. The structure is borrowed from the Anglo-Saxon legal tradition of the trust, which clearly separates legal ownership (held by the trustee) from the economic or social benefit (held by the beneficiaries). This architecture addresses a paradox typical of data markets: individuals have neither the skills nor the bargaining power to negotiate the conditions of use of their information on their own. The trust resolves this asymmetry by aggregating representation and binding it to fiduciary obligations. The price, however, is a partial surrender of sovereignty: once data has been conferred, the individual exercises no direct control over the trustee's decisions, even if the trustee formally acts in their interest. The data trust has found application in health, urban planning and financial contexts. Its strength lies in the solidity of its legal infrastructure; its weakness, in its dependence on the quality and integrity of the trustee.

- **Data commons:** The data commons draws on a different theoretical tradition: that of the commons analysed by Elinor Ostrom. Here, data is neither private nor public property, but a shared resource managed collectively by the community that generates and uses it. There is no external trustee: governance is internal, distributed, and founded on rules that the community itself develops and enforces. The emphasis is not on individual protection but on equitable access and the collective production of knowledge. Data commons find their fullest expression in scientific fields such as genomic research or astronomy. The paradigm is collaborative rather than appropriative, which implies that data is made available to all members of the community, with access criteria defined collectively. The structural weakness of the commons is the so-called free-rider problem: those who consume resources without contributing to them. Ostrom showed that commons can be sustainable, but only on condition of sufficiently robust governance institutions. In their absence, the risk is a “tragedy of the commons” in the digital domain as well. Compared with the cooperative model, data commons place less emphasis on individual sovereignty and formal ownership.
- **Data unions:** These are primarily focused on negotiation; the inspiration is explicitly trade-unionist. Individuals aggregate their data not to manage it collectively, but to increase their bargaining power vis-à-vis the platforms and organisations that acquire it. Data unions operate by fully accepting the logic of a market in which individual data producers are price-takers – entities unable to influence the terms of exchange on their own. By joining together in a union, they can instead become price-makers: active parties able to negotiate minimum standards of remuneration, transparency and use. Compared with data trusts, data unions retain greater individual sovereignty: members do not surrender ownership of their data, but temporarily delegate representation for negotiating purposes. Compared with data commons, the goal is not sharing but the maximisation of individual return. This architecture is particularly relevant in the platform economy, where the value of user-generated data is typically appropriated unilaterally by companies.
- **Data spaces:** The data space differs from the other models in its predominantly technical and commercial nature. It is not a form of shared governance but an enabling infrastructure: a standardised environment that allows data holders to grant usage rights in a secure and controlled way while preserving their sovereignty over the informational asset. The architecture is hybrid: centralised at the infrastructure level (common protocols, interoperability standards, technical trust mechanisms), but decentralised at the data level, with data remaining under the control of the original holder. The reference paradigm is GAIA-X and the International Data Spaces Association (IDSA) in Europe, where the data space is conceived as a lever for industrial competitiveness and for reducing dependence on non-European platforms. Unlike the other models, the data space presupposes neither a community nor a shared purpose: it is a neutral instrument that can be used for commercial, research or public purposes, depending on who participates and

under what conditions. The member's freedom is maximal: they can decide autonomously which data to share, with whom and on what terms.

- **Data collaboratives:** The concept of the data collaborative describes collaborative settings in which actors from different sectors share data for purposes of social interest – such as emergency response, scientific research or public policy development. The distinction from the data commons is not only one of purpose but of structure: in data collaboratives there is typically an organisational intermediary that coordinates data sharing and guarantees its use is bound to predefined purposes. This intermediary is, however, subject to forms of democratic control by the participants, which distinguishes the model from a simple unilateral donation of data. Generally, the transfer of data rights is bound to the purposes agreed among the participants – a constraint that is at once the model's strength and its weakness, since it reduces flexibility and requires reliable guarantee mechanisms.

Differentiating between these forms of data sharing shows how they respond to different objectives. In practical terms, this makes it necessary first to establish the objective of the initiative one wishes to pursue and, on that basis, to choose the form of data sharing best aligned with that purpose. In value terms, it makes it necessary to align one's own values and perception of data with the sharing initiatives one intends to develop. Where data is perceived as a public and shared good, sharing models based on reciprocity and altruism are appropriate. Where, by contrast, data is perceived as a private and competitive asset, it is better to opt for sharing models that apply market logics.

1.2 Operational challenges and obstacles to implementation

Despite the evident transformative potential of data cooperatives, the transition from theory to practice reveals numerous implementation and logical difficulties that currently make this model hard and cumbersome to implement. Systematising these difficulties, four macro-categories of challenges hindering the spread of the cooperative model can be identified:

- **Organisational and sustainability constraints:** while these entities are created to counter the "lock-in" effects of technology monopolies, they collide with the hard reality of economic sustainability. To compete in a market dominated by digital giants, cooperatives need resilient infrastructure and qualified staff. To date, it remains unclear how a model of such organisational complexity, based on the principles of altruism and cooperation, can sustain itself economically through the sale of services and products. Moreover, the natural drive towards scalability introduces the risk of relapsing into so-called "blind trust": as the organisation grows, direct control by data subjects becomes technically harder, forcing members to delegate decisions to trustees and turning participation into an act of faith.

- **Skills gap:** The ambition to combat digital exclusion is hampered by the poor data literacy of the social sector and civil society. Since data governance requires specific skills, an information asymmetry among members risks nullifying democratic control, alienating less educated individuals from the decision-making process. This introduces the moral hazard of excluding data subjects from governance processes, reproducing the very inequalities the model seeks to eliminate.
- **Regulatory and institutional obstacles:** The aspiration to promote digital self-determination is held back by underlying regulatory and terminological uncertainty. The tension between those who interpret cooperatives as complex legal frameworks of stewardship and those who reduce them to simple sharing agreements generates decision-making paralysis. Added to this is a data protection legislative landscape that is often fragmented and rarely provides agile instruments to support cooperative intermediation. In this respect, as explored in section 2.4, recent European regulation – while ambiguous on many points – offers some possible solutions.
- **Privacy and cybersecurity:** Finally, there are strictly technological challenges that are indispensable for maintaining trust at scale. These include interoperability between different proprietary systems, the standardisation of formats, and the pressing need to guarantee high cybersecurity standards to protect aggregated datasets through advanced anonymisation techniques.
- **Artificial intelligence:** To this already complex picture is added the challenge of artificial intelligence which, through its voracious appetite for data, its decision-making opacity and its lack of transparency, further challenges the values of democracy, equality and value redistribution underpinning cooperativism. On the one hand this makes the implementation of datacoops even more necessary; on the other, it deepens the values gap between current practices and the desirable scenario.

Building on the objectives and challenges outlined in this chapter, the following chapters provide an overview of the current international state of development regarding the organisational, technological and legal governance aspects to be considered when designing a data cooperative. We will also offer organisational design tools to guide those wishing to attempt the creation of a datacoop in designing their own model.

2. Creating a data cooperative: governance, technological, legal and business models

Having defined in the first chapter the principles underpinning the data cooperative model, the aim of the second chapter is to move to a more operational level of

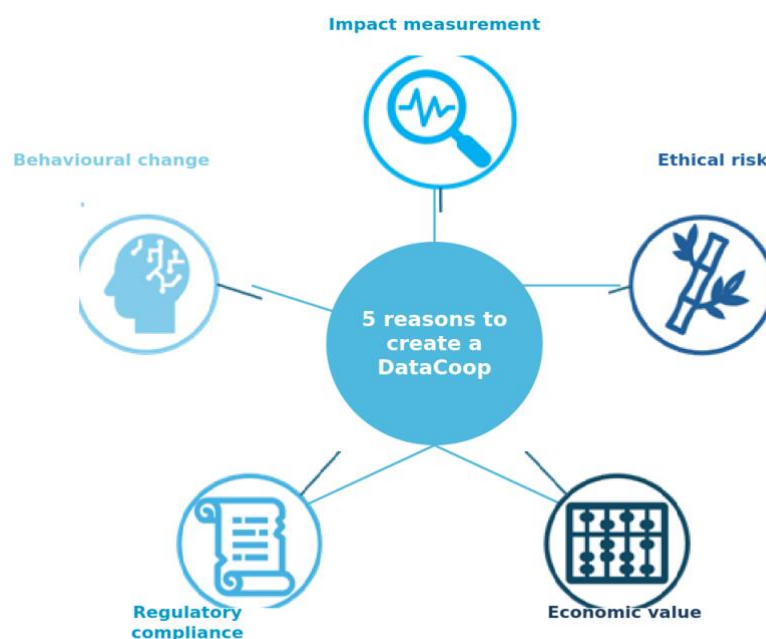
analysis. This chapter therefore addresses elements relating to the organisational, technological and business models of data coops, as well as regulatory aspects. We start from a very concrete question: when does it make sense to create a data cooperative?

2.1 When does it make sense to create a data cooperative?

Creating a data cooperative represents an architectural, legal and operational response to the imbalance created by concentrations of data – and of the power deriving from this – in the hands of a few technology actors. The cooperative model introduces a bottom-up governance system aimed at returning control to those directly concerned, rebalancing the asymmetrical relationships between the subjects to whom the data relates and the entities that process it.

Nevertheless, setting up such an entity is not a universal solution applicable to any context. The choice to establish a data cooperative acquires strategic, economic, and social meaning only when it aims to respond to specific functional needs of the stakeholders involved (Mendonça, 2025).

Specifically, five sets of circumstances can be identified in which the end justifies the effort. These are cases in which creating a data coop responds to at least one of the following objectives: improving the capacity to measure impact at system or sector level; creating the conditions needed to induce behavioural change; increasing the economic value generated (understood as value retained and redistributed); reducing ethical and exclusion risk; and reducing the burden of regulatory compliance.



[Figure 5 – The five reasons to create a Datacoop]

The following paragraphs detail these circumstances, describing the reasons that lead us to say they justify the effort.

2.1.1 Impact measurement and altruistic purposes

The first condition that fully justifies the creation of a data cooperative lies in the desire to maximise social impact, transforming the information flow from a mere commodity of exchange into a “relational datum” for purposes of general interest (Perucci, 2024; Bravo, 2024). This approach aims to protect the member’s digital subjectivity, safeguarding their uniqueness and decision-making autonomy against processes of alienation and algorithmic standardisation.

The purpose of **Salus.coop** is to enable people to share their health data – often locked in systems over which the data subject has limited access and power – turning it into a resource for scientific research. A notable technical feature is that Salus.coop itself does not store personal data: proof of the data’s existence is replaced by a personal key, and the data remains stored in a decentralised way.

In this case, the cooperative is not merely a data aggregation tool: it also performs a function of enriching informational capacity. Real-world examples such as Salus.coop and Subak show that by making critical datasets available for scientific research, public health, or the fight against climate change, datacoops foster better measurement of the impact of innovation and thus better decision-making (Bravo, 2024; Bühler, 2023b). This is due not only to the availability of the data, but also to the proximity and participation of the beneficiary in interpreting the information derived from it.

Impact measurement thus becomes oriented towards generating mutual benefit, expressed concretely through access to optimised and secure services that the individual could not obtain alone (Pentland, 2021). This scenario becomes even more relevant where the alternative is non-measurement, caused by the non-existence or unavailability of the data – conditions often due either to the appropriation of data by entities that then do not share it, or to the absence of systemic data on a given phenomenon.

Another valuable scenario is when measurement is an enabling element for innovation. One example is public–private partnerships, where the ability to quantify the benefit generated is an indispensable element for enabling new forms of financing (for instance, in outcome-based contracting) (Perucci, 2024).

In all these cases, a fundamental indicator of a datacoop’s success is the rate of democratic and active participation in data collection and interpretation (Mendonça, 2025; Bravo, 2024). Measurement is justified only insofar as members intervene directly in interpreting the data, exercising genuine participatory digital sovereignty. The cooperative makes sense, therefore, when its mission requires translating raw data into a digital common good capable of generating measurable positive externalities for the entire community (Micheli, 2020; Bühler, 2023b).

2.1.2 Behavioural change

A second purpose that would justify founding a data cooperative is the inducement of behavioural change, both at the level of the individual and at the systemic level. Through ongoing education, decision-making transparency and the pooling of information, the cooperative has the potential to transform users' role from passive subjects into active managers, informed and aware of the value of their data and of the actions it represents (Bühler, 2023b; Mendonça, 2025).

A less well-known but particularly instructive case is that of **Eva Coop**, a ride-hailing cooperative founded in Montréal and wound up in 2023 for lack of funds. Created in explicit opposition to the Uber and Lyft models – accused of building a system of merely fictitious self-employment – Eva Coop implemented a blockchain-based platform (EOSIO) in which every member operated as a peer node of the network, cryptographically controlling every operation without intermediaries. Data was anonymised, shared in a decentralised way and then made available to public administrations and private companies to plan sustainable mobility policies.

From this perspective, establishing a cooperative is particularly useful in sectors characterised by a very atomised workforce or by the strong impact of individual behaviour. In the first context, cooperatives aggregate the data generated during work performance to turn management algorithms into transparent digital commons. The shared analysis of this tracking and remuneration data allows workers to overcome the opacity of the dominant platforms' algorithms. By collectively understanding the real logics of task assignment and fare calculation, members can coordinate to adopt fairer and more profitable working strategies, rebalancing a power relationship in which the isolated worker succumbs to the platform's information asymmetry.

Behavioural change extends, by reflection, to "data users" as well – third-party companies or public institutions – which, faced with a cohesive bloc of data holders, are forced to abandon predatory acquisition practices and adopt more ethical, transparent and remunerative engagement models, on pain of being excluded from access to the datasets the cooperative can provide (Ungureanu, 2024).

The second case is where data can serve as a means of self-determination and education for a cooperative's members. This is the case of datacoops operating in the energy sector, where cooperative data aggregation guides members in taking decisions about their energy consumption behaviour. This happens, for example, in renewable energy communities, where members are given the elements to decide when it is most convenient to consume energy – at production peaks – with an economic gain for the individual and an environmental one for society.

POSMO Coop (Switzerland) is a mobility data cooperative and an example of bottom-up data stewardship, enabling its members to decide collectively how their travel data is managed and for what purposes it is used – in particular for improving urban mobility. It is an emblematic case of how cooperative

aggregation can induce behavioural change at a systemic level: individuals learn to read their own travel patterns; communities obtain aggregate data that today is almost always in the hands of Google Maps or private operators; and cities can plan sustainable mobility interventions on the basis of democratically governed datasets rather than ones purchased from brokers.

2.1.3 Value generation and redistribution

From a strictly economic and market perspective, establishing a cooperative makes unequivocal sense when it aims to increase profit or, more precisely, to retain and redistribute the economic value generated by data within the very membership base that produced it (Mendonça, 2025). Individually, one person's personal data or a single micro-enterprise's transactional data has marginal or virtually no market value; yet when aggregated, cleaned, and contextualised within large-scale datasets, it becomes an asset with very high added value.

In the agricultural sector, **JoinData** (Netherlands) shows how collective bargaining power translates into redistributed economic value. The cooperative enables Dutch farmers to securely pool and control the data from their operations while facilitating collaboration with agribusinesses and innovation partners. The model addresses a structural problem of the sector: data lock-in, whereby farmers are bound to specific technology providers who de facto control farm data. JoinData reverses this dynamic by allowing farmers to manage sharing authorisations autonomously and negotiate better conditions for the use of their data along the agricultural value chain.

The cooperative acts, to all intents and purposes, as a commercial data union: by pooling its members' datasets, the entity acquires collective bargaining power that is entirely inaccessible to the individual actor. This structural power enables the cooperative to act in its members' interest and negotiate the reappropriation of data value from actors (for example, technology corporations, advertising agencies or artificial intelligence developers) that currently exploit it. This makes it possible to negotiate significantly more favourable, transparent and binding economic conditions for licensing the use of the information. The economic advantage is not, however, necessarily and exclusively expressed in the form of a speculative year-end dividend; it manifests itself pervasively in everyday mutual benefit (Bravo, 2024). Depending on the case, in exchange for their data, members may obtain advanced analytical services, strategic insights, consumption and supply-chain optimisations, discounts or direct financial compensation proportional to the use of their data. This creates a sustainable, distributed value-allocation ecosystem that acts as a mechanism of economic rebalancing, offsetting positions of negotiating weakness and extracting value from the entrenched rents of the large technology monopolies.

2.1.4 Reducing ethical risk

The data cooperative can constitute a way of reducing the ethical risk arising from current models of digital 'colonialism' and 'capitalism'. Chief among these risks is the

exclusion of certain segments of the population – and indeed entire territories – that are systematically excluded from or under-represented in data-driven decision-making models (Bühler, 2023b).

Two examples from the Global South concretely illustrate the anti-exclusion function of data cooperatives. **Karya (India)** is a data cooperative designed specifically to provide dignified digital work opportunities to economically disadvantaged rural communities, through a platform that assigns workers data labelling and translation tasks for training AI systems, guaranteeing pay often above the local minimum wage. Karya won the iF Design Award for Social Impact 2023.

SEWA (Self-Employed Women's Association, India), meanwhile, is a long-established cooperative of women workers in the informal economy that has developed its own hybrid data governance model (owing to low access to digital technologies) to give visibility and recognition to women's work that is otherwise invisible in official datasets.

In these cases – which often concern population groups already suffering from forms of exclusion and under-representation (e.g. people with disabilities, older people, children, migrants), or territories facing the same problems (e.g. inland and mountain areas) – creating forms of data aggregation can support the defence of their interests.

These actors often suffer the consequences of their lower use of and familiarity with digital technologies, which implies an under-production of data and consequent under-representation in datasets. As a result, their perspective, interests and needs are undervalued in data-driven decisions. This risk is amplified when AI-based systems are used, since their training has been carried out on data from different geographical and cultural contexts and their decisions are taken on the basis of probabilistic calculations, which tend to exacerbate mechanisms of digital exclusion.

Aggregating data in these cases is therefore a form of resistance to digital exclusion and discrimination. Building forms of representation capable of generating missing datasets and bringing them to the attention of those who make decisions based on such datasets can be a way of defending one's rights, digital and other (Calzada, 2021; Micheli, 2020). In these cases, the data coop thus plays a dual role: aggregating and managing data on the one hand and providing representation on the other.

2.1.5 Sharing the burden of regulatory and legal compliance

The fifth functional driver – often decisive for the very feasibility of data-driven initiatives – concerns the complex and burdensome management of the risk associated with handling data, especially in highly regulated contexts such as Europe (Bravo, 2024). For a single SME, a local agricultural consortium or a community of freelancers, the costs of regulatory compliance, the risk of financial penalties for data breaches, and the inherent legal responsibilities connected with processing and sharing personal data can be entirely prohibitive, discouraging digital innovation at the root.

Creating a data cooperative means, in essence, mutualising and delegating risk. The collective entity takes on the systemic burdens: from implementing secure server architectures to automated consent management, from the meticulous drafting of records of processing activities to the appointment of a qualified Data Protection Officer (Mendonça, 2025). In particular, where the business model involves sharing special categories of personal data (such as health or biometric data, or data revealing political opinions, subject to enhanced protection under Article 9 GDPR), the cooperative can implement rigorous data risk registers. These tools make it possible to map every single threat (e.g. unauthorised access or re-identification of data), identifying the risk owner and applying mitigation strategies through physical, logical and cryptographic security measures.

Furthermore, the cooperative acts as a genuine “legal shield”, employing advanced technologies (such as pseudonymisation, differential anonymisation, multi-party computation or federated learning) to ensure that members’ raw data is never exposed to external vulnerabilities during analysis. Risk reduction also operates at the level of consumer/member protection: the organisation provides a secure, trusted and unified interface for exercising GDPR rights (access, erasure, portability) and for instantly withdrawing consent, protecting the individual from the abuses, opacity and unfair practices of traditional commercial data brokers.

2.2 Governance models between individual sovereignty and collective management

The institutional and decision-making architecture of a data cooperative rests historically and legally on democratic, inclusive and solidarity-based principles, which must nevertheless interface with a European regulatory framework that protects personal data as an inalienable attribute and fundamental right of the individual. This delicate balance requires the adoption of extremely sophisticated governance models, capable of reconciling the most absolute individual informational autonomy with the effectiveness and solidity of collective action. To make this possible, datacoop governance rests on three elements: dual governance, the principle of democratic representation and voting, and the fiduciary role of management. The following paragraphs unpack these concepts and explain their importance.

2.2.1 The dual governance model

The intrinsic paradox and greatest challenge of data cooperatives lie in the dialectical tension between the neoliberal paradigm of data protection and the collaborative approach typical of the cooperative movement (Bietti, 2021). Because of this rigidity, many initiatives remain trapped in a methodological individualism imposed by European regulations (focused almost exclusively on personal data), which makes bottom-up collaborative management attempts (such as data commons) excessively costly, bureaucratically unsustainable, and difficult to implement.

To overcome this dichotomy operationally, the most advanced data cooperatives implement a “dual governance” model, articulated on two distinct but perfectly synchronised levels (Bravo, 2024).

- At the *individual* level, the governance system ensures, through technological and statutory constraints, that the member always retains final and inalienable control over their personal data. In compliance with the rights enshrined in Regulation (EU) 2016/679 (GDPR), the individual member never transfers ownership of their data to the cooperative. Through dedicated dashboards, the user can determine in a granular way which specific datasets to contribute, for which specific purposes to authorise their processing, and to which third parties to allow their exposure.
- At the *collective* level, once the data (in the vast majority of cases pseudonymised, i.e. processed so that it cannot be traced back to the user it represents) flows into the common pool managed by the entity, it becomes subject to associative and democratic governance. It is the members’ assembly or the elected board of directors that decides the ethical guidelines, assesses the reliability of commercial partners, negotiates licences and establishes how mutual benefits are redistributed.

Dual governance thus ensures that the strategic and operational choices made at organisational level to maximise the value of the aggregated dataset do not hinder, override or ever conflict with the individual’s right to informational self-determination.

2.2.2 Democratic participation and the one-member-one-vote principle

The legal and philosophical foundation of European digital neo-mutualism is the application of the democratic principle of “one person, one vote” (per-capita voting). Unlike joint-stock companies or traditional technology platforms, where decision-making power in the assembly is strictly proportional to the share of capital invested or the volume of data contributed, in a cooperative every member holds exactly equal political weight.

This structural feature is absolutely decisive in preventing organised actors with larger volumes of data (for example, a network of SMEs versus a multitude of individuals within the same cooperative) from monopolising decisions, forcing through commercial partnerships unwelcome to the majority, or steering the entity’s redistribution policies to their exclusive advantage. Participatory governance is also expressed through the “open door” principle (enshrined in Article 2528 of the Italian Civil Code), guaranteeing free and non-discriminatory access to anyone who identifies with the organisation’s mutual purposes, meets the statutory requirements and is willing to assume its responsibilities. For modern data cooperatives, often composed of thousands or millions of members distributed over a wide geographical area, implementing digital social collaboration platforms, structured discussion forums and cryptographically secure e-voting tools is essential to keep democratic

participation alive, overcoming the physical limitations of traditional assemblies (Mendonça, 2025; Bühler, 2023b).

2.2.3 The fiduciary role of management

In the complex architecture of a data cooperative, directors, managers and technical committees do not operate merely as executives: they assume a legal and ethical role towards the members comparable to that of fiduciaries (or data stewards (Van der Sloot, 2022). Management's intrinsic mandate is to act in the members' higher interest, proactively mitigating power asymmetries vis-à-vis "data users".

MIDATA, founded in 2015 by researchers from ETH Zurich and the Bern University of Applied Sciences, offers a concrete illustration of the fiduciary role in action. A non-profit public-utility cooperative, MIDATA articulates its fiduciary governance on several levels: an independent auditor verifies the integrity of the system; any data user wishing to access the pool must submit a detailed proposal, which is examined by an ethics committee that assesses the privacy safeguards and reports to the general assembly; only after a positive assessment can the account holder consent to the release of data for the specific project.

The fiduciary role takes concrete form in highly specialised operational activities: the technical and legal analysis of data licence agreements (terms of service), the rigorous assessment of dataset re-identification risks before any transfer to third parties, the conduct of system security audits, and the guarantee of maximum algorithmic transparency for the models developed.

Management also takes on the diplomatic task of interpreting and reconciling the "conflicting positions of individual members" within the membership, in order to find operational and compromise solutions that protect the base as a whole while allowing the enterprise to operate in the market. Fiduciary ethics further requires that the administration never yield to the temptations of short-term monetisation where the commercial extraction of data would jeopardise the privacy, fundamental rights, reputation or ethical integrity of the members who have placed their trust in the cooperative institution (Van der Sloot, 2022).

2.3 The technological architecture of a data cooperative

The governance architectures and business-model ambitions of a data cooperative would remain sterile theoretical abstractions in the absence of a robust, scalable, interoperable and rigorously privacy-preserving technological substrate. The cooperative IT infrastructure must enable the collection, organisation, protection and exposure of data, while guaranteeing its security and compliance with European regulatory frameworks.

2.3.1 From centralised architectures to Data Federation

The cooperative data platform – the IT system on which data is collected and through which members interact with data – is the technological environment that catalyses operational collaboration among members. The first technical hurdle the platform must tackle is harmonising volumes of data coming from heterogeneous sources, in most cases in different formats.

The traditional approach to data integration involves rigid processes of extracting, transforming and loading raw data into a single physical repository owned by the platform. However, this centralised approach exposes the organisation to greater security risks (a ‘single point of failure’) and implies surrendering control over one’s primary informational asset. Such solutions have therefore met with strong resistance in the past.

To overcome these problems, the most technologically advanced data cooperatives tend to favour the Data Federation (or data virtualisation) paradigm. Data federation makes it possible to integrate and access geographically distributed information in a completely transparent way, without needing to transfer the data into a single central database. In a federated architecture, data remains located in members’ local systems (for example, on the on-site servers of a member SME, in the cloud of a participating consortium, or in the encrypted Personal Data Store on an individual’s device). The cooperative Data Platform applies only a logical and semantic layer (a virtual relational schema) that maps the distributed databases onto a common ontology and queries the decentralised sources in real time only when necessary, returning query results without moving the raw data. This approach guarantees the member’s data sovereignty, drastically reduces the cyber-attack surface and minimises the physical storage costs borne by the cooperative.

Among the most radical applications of the federated, decentralised paradigm is **Polypoly**, a European cooperative based in Germany (Berlin) created with the declared aim of “restoring data holders’ sovereignty over their personal information” and countering the dependence of European citizens and businesses on non-European data monopolies. The cooperative’s technological core is the **PolyPod**, an application installed directly on the user’s device (smartphone, computer, IoT device) that acts as an encrypted Personal Data Store. The architectural principle is pushed to its most extreme consequence: data never leaves the device. Through the use of edge computing, all processing takes place locally, eliminating at the root the need for a central repository and drastically reducing both the storage costs borne by the cooperative and the cyber-attack surface. Organisationally, Polypoly is experimenting with a tripartite model called the “PolyVerse”, composed of three legally distinct but strategically coordinated entities: the Polypoly Cooperative (representing the interests of citizen-members), Polypoly Enterprise (developing commercial solutions for businesses) and the Polypoly Foundation (engaging with the public sector on the regulatory framework). This functional separation effectively anticipates the logic that the Digital Omnibus proposes to introduce in place of

the rigid structural separation required by Article 12 DGA. As for the business model, members retain full decision-making control: they can choose whether to make their data available free of charge (donation) or for a fee; in the latter case, the cooperative retains a predetermined percentage which is redistributed among members. The GDPR is “embedded in the code” through Privacy by Design mechanisms. It should, however, be noted that Polypoly is currently in liquidation.

2.3.2 The Virtual Data Lake and distributed computing

Closely connected to the concept of semantic federation is the Virtual Data Lake paradigm. Unlike a traditional physical data lake into which raw data is poured indiscriminately, a Virtual Data Lake provides an entirely virtualised exploratory and analytical environment (Bravo, 2024). By orchestrating computing engines distributed across the network’s nodes, the cooperative can run complex analytical queries and train machine learning algorithms directly on the members’ decentralised data sources.

Within this architectural context, Federated Learning logics find perfect application (Bühler, 2023b). Rather than concentrating data in a central server to train an artificial intelligence, it is the algorithm itself that travels to the peripheral nodes where the data resides (members’ servers or devices). The algorithm learns from local statistical patterns and returns to the central system only the model’s updated mathematical “weights” and gradients, without ever exposing, moving or copying personal or commercially sensitive data. The global model is then aggregated centrally by the cooperative. This method acts as an absolute privacy shield – a local confidentiality-preservation layer for AI applications – while still allowing the organisation to generate predictive models.

2.3.3 Anonymisation, pseudonymisation and security technologies

Even where data must be partially centralised or exposed to third parties (for example in the case of commercialisation or pooling for research), the level of exposure must be mediated by strict security and obfuscation protocols. The cooperative technological infrastructure must mandatorily embed the fundamental GDPR principles at code level: Privacy by Design and Privacy by Default (Art. 25 GDPR) (Mendonça, 2025). The engineering techniques employed include:

Pseudonymisation: the procedure of replacing direct identifiers (names, tax codes) with artificial keys or tokens. This allows the cooperative to link data back to the original user (for example, to deliver a personalised service) only via a specific decryption key, which is stored under technical and organisational measures strictly separated from the main dataset (Fink, 2024).

Anonymisation and synthetic data: the application of algorithmic techniques (such as k-anonymity or differential privacy) to deliberately introduce calibrated statistical noise into datasets. This obfuscation mathematically and irreversibly prevents the re-identification of individuals or companies, while keeping the statistical value for macro-economic analyses almost entirely intact. An increasingly

widespread alternative involves the cooperative using the real data provided by members to train generative algorithms tasked with creating “synthetic datasets”: artificial data that mirrors the original statistical distributions with pinpoint precision but contains no trace of or correlation with real subjects, and is therefore freely and legally shareable.

Advanced cryptography: the systematic use of end-to-end encryption for data in transit and at-rest encryption for stored data. In very high-security cooperative scenarios (for example in consortia of financial institutions), multi-party computation or homomorphic encryption is used – a technology that allows the cooperative’s analysts or partners to perform complex mathematical operations directly on encrypted texts, obtaining correct results that can be decrypted only by the legitimate key holders.

2.4 The legal and regulatory framework for data cooperatives: DGA, GDPR and the challenges of compliance

Data cooperatives operate within a rapidly evolving legal framework that is not governed comprehensively by a single legislative act but derives from the intersection of several sources of European law. In particular, the regulatory core was codified and promoted through the Data Governance Act (Regulation (EU) 2022/868 – DGA), which entered into application on 24 September 2023. It represents one of the fundamental pillars of the European Strategy for Data and is the first EU legislative act to expressly mention data cooperatives as an autonomous category of intermediation service providers (Article 10(c) DGA). The DGA also defines these data intermediation services as aiming to establish commercial relationships for the purposes of data sharing between an indeterminate number of data subjects and data holders on the one hand, and data users on the other, through technical, legal or other means (Art. 2(11) DGA). Alongside the DGA operate the GDPR (Regulation (EU) 2016/679), the Digital Markets Act, the Digital Services Act, the Data Act and the AI Act. This regulatory complexity therefore makes it necessary to examine the interrelationships between the different regulatory domains.

2.4.1 The neutrality principle

The heart of the rules for intermediation service providers – and thus also for data cooperatives – is the neutrality principle (Art. 12(a) DGA) (Bravo, 2024). The provision establishes that the data intermediation service provider may not use the data for which it provides intermediation services for purposes other than making that data available to users and must provide such services through a distinct legal person. This means that the pure intermediation service must be delivered through a legal person rigidly separated and distinct from any other entity providing possible “ancillary services” (activities of manipulation, enrichment, deep statistical aggregation or the development of analytical models on the intermediated data).

This principle has no value in itself but functions as an instrument serving the broader functions envisaged by the DGA. In concrete terms, the principle unfolds along three distinct dimensions:

- **Purpose limitation:** the provider may not use the data it is intermediating for purposes other than simply making it available to those who have requested it. It cannot, in other words, take advantage of its position to exploit that data in any other way.
- **Service limitation:** the intermediary may offer only intermediation services, i.e., connecting those who offer data with those who wish to use it. The DGA applies only to those who play this role neutrally, as a transmission channel, explicitly excluding all other actors who work with data in different ways – from cloud service providers to content intermediaries, data brokers, and companies that process data to create value-added products.
- **Structural separation:** the intermediary must operate through a legal entity separate from its other activities.

2.4.2 The challenge of structural separation

As anticipated, the obligation to create a separate legal entity for the intermediation activity is intended to avoid conflicts of interest between those who manage data and those who might benefit from its use (Recital 33 DGA). The problem is that this separation, as written in the DGA, is purely formal, not substantive. The regulation requires the creation of a distinct legal entity, but provides no concrete mechanism to guarantee that this entity is genuinely independent in practice. Consequently, the requirement can be circumvented fairly easily: one need only think of a corporate group in which one company acts as intermediary and another uses the data.

As noted by Petrone (Bravo, 2024), for data cooperatives this limitation loses its significance and meaning. While it makes sense to impose separation on a traditional commercial intermediary – which by definition should have no interests of its own in the data it manages – this is not true of a cooperative, since the latter exists precisely to bring direct benefit to its members. Prohibiting it from using internally the data contributed by members, obliging it to make that data available only to external parties, contradicts the mutual and solidarity-based logic that justifies its existence. One way out might be to interpret these rules with greater flexibility, taking into account the cooperative nature of the entity and coordinating the DGA with the rules of cooperative law. This solution is risky, however, since it lacks an explicit legal basis, and cooperatives adopting it would expose themselves to possible challenges from supervisory authorities.

2.4.3 The intersection with the GDPR: limits of delegation and collective will

The entire architectural and operational activity of European data cooperatives must not only conform to the DGA's intermediation rules, but must operate in full

compliance with the General Data Protection Regulation (Regulation (EU) 2016/679, GDPR). The two sets of rules coexist in a relationship of complementarity and, at the same time, tension, which manifests itself in particular on two issues: the possibility of delegating one's rights to the cooperative, and the way in which the entity's collective will is formed.

The GDPR builds a system of protection founded on the individual: the data subject's rights (access, rectification, erasure, portability, objection) are attributed to each natural person, who can exercise them on the basis of their own consent or of the other legal bases provided for in Article 6. In the original DGA proposal, Recital 24 stated that individual rights arising from the GDPR could not be conferred on or delegated to the data cooperative. This position was, however, removed from the final text of the regulation, though the non-transferability of the rights themselves in a "real" sense was reaffirmed. The European legislator thus made the significant choice of protecting data cooperatives' bargaining power, admitting in principle the possibility for members to delegate the exercise of their rights to the cooperative, albeit without explicitly resolving all the ambiguities.

This opening has precise limits, however, since delegation can never cause the individual to lose their rights: each member remains free to exercise them autonomously and can revoke the mandate conferred on the cooperative at any time. Moreover, the delegation must be specific – referring to clearly identified purposes and processing operations – and must always aim to protect the data subject's interests, not to override them (Art. 7 GDPR).

The most acute problem concerns consent for the processing of personal data, since part of the literature has argued that consent is a strictly personal and non-delegable act: at most, the cooperative could help the member understand what they are signing, or technically transmit their will to third parties, but not substitute itself for them. Another, more persuasive, interpretative current observes instead that consent does not constitute a personal act in the technical sense and that its delegability is consistent with the logic of the DGA.

The matter becomes even more complicated when the internal decision-making structure of cooperatives is considered. If the members' assembly approves a resolution deciding to share certain data with a third party, that resolution does not also count as individual consent to processing. A dual control over processing must be maintained, one that does not invalidate the data subject's "individual" governance. In other words, the assembly resolution authorising a given data-sharing operation does not replace the individual consent required by the GDPR: the two levels remain distinct, and the cooperative cannot "absorb" the will of the individual into the collective will. The data governance rules leave the system of data-subject protection regarding the lawfulness of processing unaltered, entrusting the data cooperative, in its role as intermediary, with the negotiating activity carried out for the benefit of its members, in order to obtain far more favourable conditions than data subjects would obtain individually, given their lack of real bargaining power.

2.4.4 The challenges of operational compliance

As already observed at the formal level, at the operational level too data cooperatives must simultaneously comply with the obligations arising from the DGA (notification or registration, appointment of a compliance officer, implementation of technical standards) and those arising from the GDPR, including keeping the Record of Processing Activities and potentially appointing a Data Protection Officer.

The data cooperative thus presents itself as an entity playing a threefold role: it pursues solidarity purposes, it processes personal data and, at the same time, it intermediates data services. These three identities carry with them three different regulatory regimes, all applicable at the same time, that require fairly elaborate internal governance structures to be managed coherently (Bravo, 2024).

The picture that emerges is therefore one of ambitious and innovative legislation, which has the historic merit of recognising data cooperatives as actors in the European digital market, but which still leaves many questions open. Further clarification will be needed, both through legal interpretation and through the practice of the supervisory authorities – in particular the data protection authority and the authority for intermediation services – which will be called upon to work in a coordinated manner.

The regulatory dimension is currently one of the most complex aspects, and it certainly limits the establishment of data cooperatives to some extent. It should, however, be approached as an enabling rather than an obstructive element, in the awareness that this is an evolving regulatory framework that has yet to find its equilibrium.

2.4.5 The Digital Omnibus's promise of simplification

At the time of writing this report (March 2026), the so-called Digital Omnibus (European Commission, 2025) is under discussion at European level – a regulation that would change the Union's main rules on data use, amending, among others, the DGA, the Data Act, the GDPR and the AI Act. It must therefore be noted that this regulation, aimed at substantially simplifying European regulation, envisages certain changes that would significantly affect the data cooperative model.

First of all, the proposed regulation proposes to make registration for data intermediation organisations voluntary rather than mandatory. This would make it possible to operate as a datacoop without being officially registered as a data intermediation or data altruism organisation.

To facilitate the sustainability of data intermediation and data altruism organisations, it is proposed to turn the obligation of structural separation between those offering intermediation or data altruism services and those offering value-added services into an obligation of functional separation. This would enable the provision of value-added services – and thus the economic sustainability of the organisation – without incurring excessive organisational complexity.

Such services could be offered under certain conditions (explicit request by the client, functional separation, independence from gatekeepers, and preservation of the user's decision-making independence).

Of even greater interest, however, is the fact that – precisely to encourage the emergence of widespread intermediation and altruism services – micro and small enterprises would not have to comply with these conditions. This provision effectively further simplifies the creation of a datacoop.

2.5 Organisational aspects and business models

Devising and developing a financially sustainable business model is the hardest operational challenge for the founders of a data cooperative. Both by nature and by regulation, the cooperative is called upon to develop hybrid strategies that respect financial sustainability and solidarity values, democratic principles and the maximisation of value for members (Mendonça, 2025; Bühler, 2023b).

2.5.1 Framing data cooperatives within the social enterprise scheme

In the Italian legal system, the convergence between the mutual purposes of data cooperatives and the need to operate on the free market finds a solid legal framework in Legislative Decree No. 112 of 3 July 2017, which regulates and revises the qualification of social enterprise.

Data cooperatives, where they decide to incorporate or qualify as such, can take the legal form of the social cooperative, originally governed by Law 381/1991. In this regard, under Legislative Decree 112/2017, these organisations carry out on a stable basis a business activity of general interest (objects such as the democratisation of access to technology, digital education, or support for scientific research through data would qualify), allocating any profits and operating surpluses to the pursuit of the statutory activity or to increasing assets. While providing strict limits on the distribution of dividends among members (to prevent speculative deviations), social enterprise or third sector entity (ETS) status allows the cooperative to access favourable tax regimes, credit support measures and deductions for risk-capital investors, and to benefit from the privileged relationship with public administrations provided by the instruments of "shared administration" (co-programming and co-design) (Bravo, 2024).

Adherence to the social enterprise scheme fits perfectly with the "EMES" (Emergence of Social Enterprises) evaluation model, which identifies the ideal social enterprise through three dimensions: a continuous economic activity with entrepreneurial risk (translating into the management and commercial validation of the data platform), an explicit social dimension (corresponding to the emancipation of members through control of their data), and participatory governance decoupled from capital owned.

2.5.2 Operational data configurations and their structural implications

The concrete implementation of the revenue logics described varies according to how the organisation structures the flow of data. The literature identifies five fundamental operational configurations, distinguished by the breadth of the data circulation perimeter and the nature of the actors involved: (1) Member-to-Cooperative, in which data remains within the cooperative for exclusively internal use; (2) Member-to-Member, in which the cooperative facilitates direct exchange between members; (3) Federated, in which data circulates between different but related organisations; (4) Third-Party, in which data is shared with external parties under licence; (5) Open Data, in which anonymised data is made freely available.

Each of these configurations is not simply a technical mode of transfer: it implies radically different choices regarding many aspects. Whatever configuration is adopted, every data cooperative must simultaneously define a governance structure, a consent architecture, a technical infrastructure, a value creation and distribution cycle and, finally, a mechanism for building (and maintaining) trust towards and within the community (Mendonça, 2025).

What changes from one configuration to another is how these dimensions are shaped. The following table analyses the five configurations along these dimensions, bringing out the operational specificities of each model.

Dimension	Member-to-Cooperative ¹	Member-to-Member ²	Federated ³	Third-Party ⁴	Open Data ⁵
Democratic data governance	Internal, relatively simple decisions: the democratic "one member, one vote" principle applies without external actors. The cooperative collects and processes data to deliver services to members.	The cooperative defines rules for reciprocal access among members. The dual model operates on two levels: individual (the member decides what to share) and collective (the assembly sets the matching rules).	Multi-level governance: within the individual cooperative and at federation level, with shared protocols. The literature proposes four levels (organisational, digital, industrial, project-based) combining hard and soft principles.	The cooperative fully exercises its fiduciary function: it negotiates terms with third parties on the members' behalf, concluding agreements that protect the members' higher interest. Management becomes highly specialised in contract analysis.	Compliance-oriented: defining the conditions for anonymisation and publishability. The model aligns with the DGA provisions on data altruism.

1 Bravo, 2024; Mendonça, 2025; Bühler, 2023b.

2 Mendonça, 2025; Fink, 2024; Bühler, 2023b.

3 Bietti, 2021; Bühler, 2023b.

4 Van der Sloot, 2022; Mendonça, 2025.

5 Micheli, 2020; Calzada, 2021.

Dimension	Member-to-Coop-erative ¹	Member-to-Member ²	Federated ³	Third-Party ⁴	Open Data ⁵
Consent architecture and data sovereignty	General, linked to joining the cooperative. Since data does not leave the cooperative perimeter, no transaction-specific consent is needed, although GDPR compliance remains necessary.	Granular: the member chooses which data, with which other members and for what purposes. Notably, different privacy preferences may require personalised rules.	Multi-level: internal individual consent + collective assembly resolution for the federation. It reflects the tension between the individualistic GDPR paradigm and the collective cooperative approach.	Explicit, informed, specific to each transaction: data holders retain exclusive decision-making power over which data to release for each project. It is revocable at any time.	Altruistic: adherence to the principle of open data, consistent with the DGA. The member accepts that data, after rigorous anonymisation, is available to the community. The right of withdrawal remains for data not yet anonymised.
Cooperative technical infrastructure	Internal aggregation platform with encrypted storage. No external interoperability needed. The literature identifies the data governance platform and the basic technology stack as essential components (Mendonça, 2025).	Granular permissions, member matching, pseudo-anonymisation for benchmarking. Fink describes three technical roles: data storers (members), internal data consumers, and the cooperative as manager of authorisations and consent management.	The most sophisticated: federated platforms with open APIs, data virtualisation. Bühler et al. propose SaaS, Data Science as a Service, federated learning, data clearing, data marketplace, privacy and anonymisation in a multi-cloud environment.	Audit trail for every external access, robust anonymisation, end-to-end encryption, revocation mechanisms with immediate effect. Mendonça et al. point to the need for a data governance committee elected by the members.	Irreversible anonymisation (k-anonymity, differential privacy). Open distribution platforms and international standards. Calzada describes Polypoly's edge computing: data never leaves the device.
Cooperative value cycle	Circular and internal: data → processing → services to members. Bühler et al. (2023) describe this phase as "collaborative resource pooling", promoting better allocation and social cohesion. Sustainability from membership fees.	Reciprocal: cross-access for benchmarking and pre-competitive growth. It corresponds to the "cooperative innovation" described by Bühler: shared knowledge for better-informed decisions. Fee-for-service for internal inter-mediation.	Network effect: the more organisations participate, the more valuable the dataset. Bühler et al. estimate benefits of 1% to 4% of GDP. It corresponds to "cooperative data market expansion". Revenues from federated services, APIs, aggregated licences.	Main revenues from licensing data to third parties. In this context, data should be licensed, not sold, preserving members' rights. Fair redistribution to members + reinvestment.	Value lies not in direct revenues but in social impact: research, public policy, reduced asymmetries. Micheli et al. link this to "data commons" and open cooperativism. Sustainability from grants, donations, fees.

Dimension	Member-to-Cooperative ¹	Member-to-Member ²	Federated ³	Third-Party ⁴	Open Data ⁵
Community and trust	Towards the cooperative: based on the tangible perception of benefits. Mendonça et al.: operational transparency through dashboards, regular updates and accessible governance tools. Without perceivable benefits, members disengage.	Among individual members: transparency on access rules and reputation mechanisms are needed. The diversity of expectations (privacy vs. monetisation vs. ethical use) can generate lengthy negotiations and deadlock risk.	Between organisations: the most critical challenge. Bühler et al. show in the construction sector that the obstacles to cooperation are not technical but competitive and trust-related: a pre-competitive space guaranteed by the cooperative structure is needed.	A sine qua non: if members perceive opacity in data use, the system collapses. Van der Sloot et al. warn that trust in the tech sector is declining, making verifiable trust mechanisms critical.	Towards the community at large: the cooperative as an actor for the common good. Bravo describes digital neo-mutualism as a growth model for the economy and society, developing communities for reasons of solidarity.

[Figure 6 – Operational detail of data cooperativism models.]

Practical examples for each configuration:

To anchor the five configurations in real cases, some examples from international practice can be recalled. The Member-to-Cooperative model finds expression in Driver's Seat (USA), where member-drivers' data is aggregated and analysed by the cooperative mainly to return insights to members. The Member-to-Member model is illustrated by SAOS (Scotland), an agricultural cooperative that aggregates its member-farmers' data to create a real-time livestock traceability database through the food supply chain. The Federated model is exemplified by JoinData (Netherlands), which networks Dutch agricultural cooperatives so that farmers can retain control over their data while participating in inter-organisational collaborative projects. The Third-Party model is represented by MIDATA (Switzerland), which mediates the relationship between member-holders and external data users (research institutes, pharmaceutical companies) through granular, transaction-by-transaction consent. The Open Data model, finally, finds concrete expression in OpenAQ (a global non-profit), which makes open air-quality data available to support local community action, and in Salus.coop, which, through the Common Good Data Sharing License, opens data for research purposes in the public interest.

The table shows a progression of increasing complexity: in the Member-to-Cooperative model governance is simple and consent is general, while in the Third-Party model governance is intense and consent must be explicit, informed and revocable for each transaction. Likewise, the infrastructure moves from a closed internal platform to systems with audit trails, advanced encryption and real-time revocation mechanisms. Trust, finally, is transformed: from a direct member-cooperative relationship based on tangible benefits, to a systemic condition whose absence causes the collapse of the entire model.

This observation has an important implication for building a business model for data cooperatives, since whatever tool one wishes to adopt to design or analyse a data

cooperative will have to be articulated around these five dimensions, because it is they that determine the specific form the model takes.

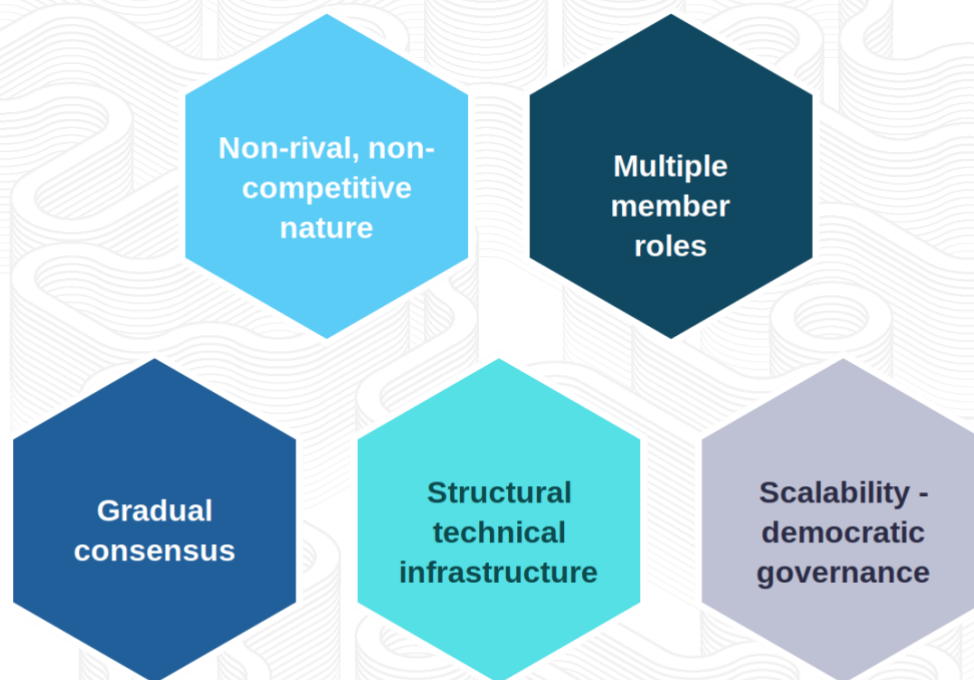
In the next chapter, dedicated to the business model of data cooperatives, we will analyse how these five dimensions can be designed and which aspects must be considered in designing each of them.

3. The business model of a data cooperative

3.1 The specific features of datacoops as social enterprises

Like all hybrid organisations, data cooperatives are distinguished by their systemic orientation and the need to manage multiple stakeholders in complex contexts. It is precisely for this reason that there is no single business model applicable to data cooperatives; rather, several configurations can be identified that respond differently to possible balances between the enterprise, the beneficiaries and the market. The earlier analysis of the five operational configurations showed how each implies different choices on governance, consent, infrastructure, value and trust.

In the effort to create business-model archetypes for data cooperatives, however, it is necessary to integrate the specific features of the datacoop model with pre-existing social enterprise models. In particular, five fundamental properties can be identified that must be taken into account.



[Figure 7 – The specific features of the Data Coop model]

The non-rival and replicable nature of data. Unlike a physical product, data can be shared infinitely without being exhausted. In this context, the term “stewardship” is deliberately preferred to “ownership” precisely because traditional ownership implies exclusivity, which contradicts the collaborative nature of a data cooperative and the non-rival nature of data. In traditional hybrid models, value is created in the transaction – the sale of a good; in datacoops, value is created through the aggregation and combination of data from multiple sources. This radically changes the logic of the business model: value does not decrease with sharing, it increases. As estimated by Bühler et al. (2023), data sharing can generate benefits of 1% to 4% of GDP, with a value for users 10 to 20 times higher than for the original holders.

The multidimensionality of the member’s role. In classic social enterprise models, the beneficiary has a relatively defined role: a client, a worker, an entrepreneur to be supported or a producer to be connected to the market. In data cooperatives, the member is simultaneously data provider (contributor), data owner (rights holder), beneficiary of services, democratic governor (with voting rights) and potential data consumer. This systematic overlap of roles requires a framework that captures its specificity.

Granular consent as a structural element. Unlike conventional data platforms, data cooperatives promise transparency, democratic control and shared benefits. The mechanism of granular, revocable consent (i.e. which data I share, with whom, for what purpose, with the right to withdraw at any time) is not an accessory aspect but a constitutive element of the business model itself.

Technical infrastructure as a component of the model. Unlike traditional social enterprises, where technological infrastructure is one resource among many, in data cooperatives the technological layer (i.e. data governance platforms, encryption, access rights management systems, cloud or federated infrastructures) cannot be separated from the business model, as they constitute one of its substantive frameworks.

The challenge of scaling democratic governance. As membership grows, cooperatives face a specific paradox: maintaining democracy while making efficient decisions. As in traditional cooperatives, data cooperative members may have very different expectations regarding privacy, monetisation and data governance. This heterogeneity of interests represents a structural challenge to the business model, which the analysis of operational configurations brought to light: in the federated model, trust between organisations is the most critical challenge, with obstacles to cooperation that are not technical but competitive and trust-related; in the third-party model, members’ trust is a *sine qua non*, whose loss causes the collapse of the entire system.

These five properties converge with the five structural dimensions that emerged from the comparative analysis of operational configurations in the previous chapter. It is thus clear that the dimensions emerging from the analysis are the operational manifestation of the ontological properties of data as an asset. It is from this

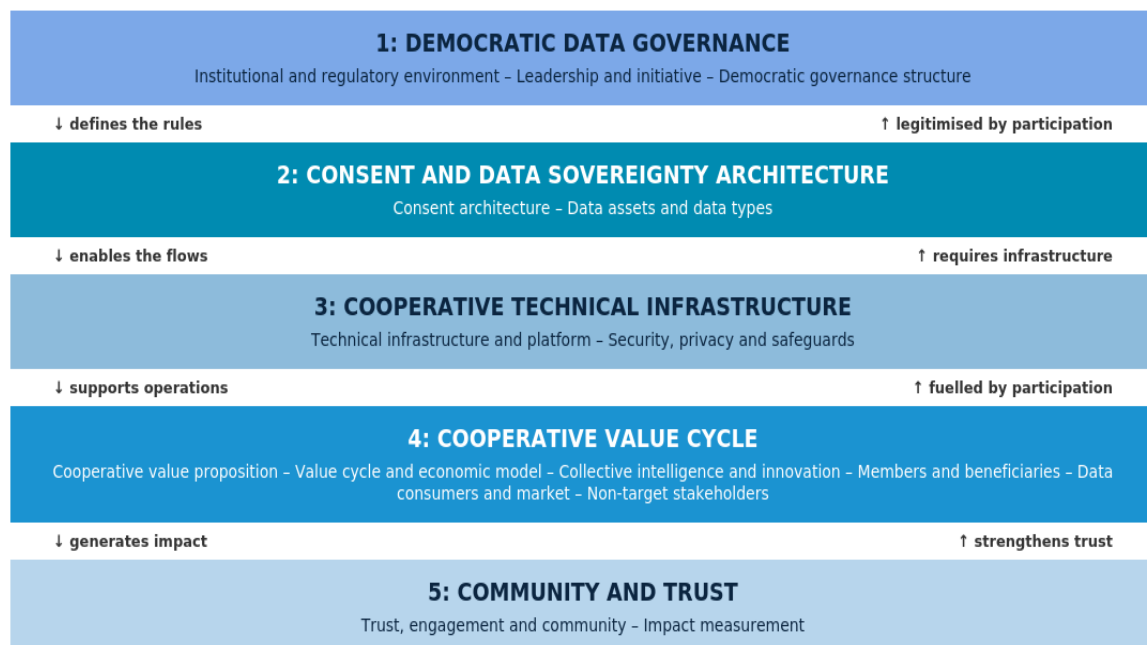
convergence that a business model specifically conceived for data cooperatives can be built on a solid foundation.

3.2 Formalising the Data Cooperative Business Model

In the study “Data Cooperatives: democratic models for ethical data stewardship”, Mendonça et al. (2025) identify four main dimensions for describing data cooperatives (governance, operational, technical, social). In our effort to outline a business model for datacoops, to these four dimensions – as already discussed in chapter 2 – we add the dimension of consent. Although this is often treated as a sub-component of the operational framework, we believe it deserves an autonomous dimension because of its centrality in determining what the cooperative can and cannot do with data.

The model that follows formalises these dimensions as interconnected layers, where each influences and is influenced by the others in a continuous cycle: governance shapes consent, consent requires infrastructure, infrastructure enables the value cycle, the value generated strengthens trust, and trust legitimises governance. Unlike the linear models typical of social enterprises (Enterprise → Beneficiary → Market), this model is a circular, reflexive system.

In the following paragraphs, we first describe the five layers in aggregate terms, and then go into the detail of the components of each layer. In addition to describing the individual components, this chapter provides guiding questions and a datacoop business model canvas (see the following figure) that can guide those interested in implementing a datacoop in designing their own model.



[Figure 8 – The five layers of a datacoop's business model]

Layer 1: DEMOCRATIC DATA GOVERNANCE

Governance forms the “backbone” of the cooperative, defining decision-making processes and guaranteeing their legality and ethics. The model is founded on the principle of democratic member control, which requires concrete participation structures: voting, board governance, open forums. To this is added compliance with legal and regulatory frameworks, in particular the GDPR and the European Data Governance Act. Bühler et al. (2023) articulate governance on four levels (organisational, digital, industrial and project-based), combining hard principles (laws and regulations) with soft ones (values, standards, procedures).

As the analysis of operational configurations showed, this layer varies in complexity: in the Member-to-Cooperative model decisions are exclusively internal, while in the Federated model governance must operate on several simultaneous levels, and in the Third-Party model it takes the form of fiduciary negotiation with external actors.

Layer 2: CONSENT AND DATA SOVEREIGNTY ARCHITECTURE

This layer is the most distinctive feature of this business model and has no equivalent in the traditional models of other types of social enterprise. It represents the system through which members concretely exercise their sovereignty over data, translating governance principles into individual operational choices. Bühler et al. (2023) stress that data sovereignty emphasises the importance of cultural sensitivity, inclusiveness and ethical responsibility in governance practices.

The MIDATA case is paradigmatic: consent is managed electronically directly through the cooperative, and account holders retain exclusive decision-making power over which data to store and release for each research project.

The analysis of configurations showed how consent transforms radically along the spectrum: from general and implicit in membership (Member-to-Cooperative), to granular and differentiated by member and purpose (Member-to-Member), to multi-level with collective resolution (Federated), through to explicit, informed and transaction-specific with the right of immediate withdrawal (Third-Party).

Layer 3: COOPERATIVE TECHNICAL INFRASTRUCTURE

Mendonça et al. (2025) define the technological framework as the essential infrastructure for storage, processing, digital security, interoperability and scalability. A central element is the data governance platform – a sophisticated software system serving as the control centre for data access, usage monitoring and compliance enforcement.

Bühler et al. (2023) demonstrate, focusing on the construction sector, that the federated platform (with its SaaS, Data Science as a Service, federated learning, data clearing and marketplace services) is not a tool of the cooperative: it is the cooperative. Their research confirmed that the obstacles to cooperation are not technical but trust-related, making the cooperative model particularly well suited to creating a pre-competitive space of trust (Bartolomucci, 2024).

From the analysis of configurations, the infrastructure ranges from a closed internal platform (Member-to-Cooperative) to federated systems with open APIs and data virtualisation (Federated), through to architectures with audit trails, advanced encryption and real-time revocation mechanisms (Third-Party).

Layer 4: COOPERATIVE VALUE CYCLE

Mendonça et al. (2025) define the economic architecture as the mechanism specifying how the cooperative generates and distributes value among members. This is not simply about financial returns, but a broader range of benefits: access to data-driven insights, greater bargaining power, preferential access to services. The challenge is to design a sustainable and fair model.

Bühler et al. (2023) describe a virtuous cycle with four interconnected dimensions: (A) collaborative resource pooling, (B) cooperative innovation, (C) expansion in the data market, (D) cooperative ROI. The cycle closes with reinvestment feeding the next cycle.

The analysis of configurations showed how the cycle varies from circular and internal (Member-to-Cooperative), to reciprocal and pre-competitive (Member-to-Member), to a network effect with growing value (Federated), through to third-party licensing with fair redistribution (Third-Party) and pure social impact with grant-based sustainability (Open Data).

Layer 5: COMMUNITY AND TRUST

The social framework is indispensable to the cooperative's success: it goes beyond mere membership and encompasses deliberate strategies to cultivate trust, promote active engagement and encourage collaboration (Mendonça et al., 2025). Without trust and active participation, the cooperative risks losing its ethical and democratic advantage.

Mendonça et al. (2025) articulate the challenges along three dimensions: operational transparency (dashboards, regular communication), values alignment (tangible benefits aligned with members' values), and community building (events, forums, workshops). Van der Sloot and Keymolen (2022) warn that trust in the tech sector is declining, making the construction of verifiable mechanisms even more critical.

The analysis of configurations confirmed that trust transforms along the spectrum: from a direct member-cooperative relationship (Member-to-Cooperative), to reciprocal trust between peers (Member-to-Member), to inter-organisational trust in a pre-competitive space (Federated), through to a systemic condition whose absence causes the collapse of the entire model (Third-Party).

As anticipated, the five layers are not isolated components but exist in a dynamic interaction that forms a continuous flow of interaction and value. Governance decisions shape operational processes, which are in turn supported by the technical infrastructure. The social framework, by promoting trust and participation, reinforces the governance structures, ensuring that the cooperative remains accountable to its

members. This interaction highlights the need for a holistic approach, recognising that each layer influences and is influenced by the others.

3.3 From the model to the canvas: conceptualising the components

The configuration defined so far provides the architecture of a datacoop's business and governance model; through the canvas that follows, we aim to translate the concepts already set out into operational form. In particular, each layer is broken down into sub-dimensions that can be analysed and designed. The derivation is not mechanical but reflects the fact that each layer generates multiple design needs. Each sub-dimension is accompanied by a number of reflective questions that can support those interested in creating a datacoop in its implementation. The business model canvas (BMC) was created in this case through two main methodologies: research on the governance factors of data collaborations (Bartolomucci, 2024) and a comparison with the dimensions of the business model canvas for hybrid/social enterprises (Sparviero, 2019).

Layer 1: DEMOCRATIC DATA GOVERNANCE

Institutional and regulatory environment – Leadership and initiative – Democratic governance structure

Institutional and regulatory environment

This component, absent from the traditional BMC, identifies the institutional and regulatory context in which the cooperative operates. Operating at the intersection of multiple regulatory frameworks, regulatory compliance for data cooperatives is not an external constraint but a constitutive element of the model. Before designing the cooperative's governance and activities, it is therefore necessary to map the regulatory environment, paying particular attention to aspects relating to data sharing. Likewise, it is right to observe and understand which actors, institutional and otherwise, will need to be involved in setting up the cooperative or will simply be affected by its activity.

Key questions

- Which institutional actors are affected by this initiative?
- What are the main regulations concerning this initiative, in particular those relating to data sharing and privacy?
- Does the cooperative fall within the scope of data intermediation services under the DGA? What obligations and opportunities follow from this?

Leadership and initiative

Unlike a traditional enterprise, where leadership is typically entrepreneurial, in data cooperatives leadership is distributed and must balance the members' democratic

mandate with decision-making efficiency. At the same time, especially in the early stages, a clear leadership figure is needed – one able to bring a stock of trust on the basis of which other actors choose to join the initiative.

Key questions

- Who is, or could be, the initiator of this partnership?
- Is there alignment between the initiative's formal and informal leadership?
- How can the initiative evolve from centralised to distributed leadership over time?

Democratic governance structure

This component is of primary importance, since the cooperative's governance is one of its most characteristic elements. Designing a data coop's governance includes designing the voting mechanism through which members express their preferences on data use – the mechanism through which the coop's fiduciary duty is expressed and translated into processes. Which governing bodies and decision-making processes will be put in place to avoid power imbalances between the partners must be established. In addition, the statutory and technical mechanisms must be designed that can protect the cooperative's collective informational assets (aggregated data, insights, infrastructure) from misappropriation by individual actors, from dependence on proprietary technology providers, and from the risk that a dominant data consumer acquires disproportionate bargaining power. The design of data-sharing policies also falls within democratic governance.

Key questions

- What legal form and which decision-making bodies are adopted?
- Through which governing bodies are the democratic principle in data governance and the priority of members' interests in decisions guaranteed?
- How is the transparency of decisions on data sharing guaranteed?
- How does the cooperative's fiduciary duty towards its members take concrete form?
- What accountability procedures (periodic audits, transparent reports, members' right of veto) verify compliance with it?

Layer 2: CONSENT AND DATA SOVEREIGNTY ARCHITECTURE

Consent architecture – Data assets and data types

Consent architecture

This describes the system through which members concretely exercise their sovereignty over data. It therefore includes: granular consent (which data I decide to share), contextual consent (for what purpose and with whom), revocable consent (with the right to withdraw at any time) and transparent consent (monitoring

dashboards). The consent architecture must ensure that all members are put in a position to take informed decisions and monitor data use transparently.

Key questions

- How do members concretely exercise sovereignty over their data?
- That is, what processes and mechanisms can be put in place?
- Do these imply that consent is differentiated by data type, purpose and recipient?

Data assets and data types

This identifies and classifies the data available to and needed by the cooperative – distinguishing between data already in use and data held but unused, assessing its potential for use, and also exploring the potential of collaborative data, making the distinction between intra-sectoral, cross-sectoral and coopetition data. When identifying data of possible interest to the cooperative, it is important to distinguish whether it falls within the classification of personal and/or sensitive data – and must therefore be treated as such – or not. It is also important to understand who currently holds such data and whether there are logics of data appropriation and exploitation that need to be changed through the cooperative's work.

Key questions

- Which data can be used to generate cooperative value?
- Is it personal or sensitive data? How should it be treated?
- Who currently holds this data?

Layer 3: COOPERATIVE TECHNICAL INFRASTRUCTURE

Technical infrastructure and platform – Security, Privacy and Safeguards

Technical infrastructure and platform

This describes the platform and the technological infrastructure enabling the datacoop model, allowing data to flow securely, scalably and sovereignly among the cooperative's members. It covers in particular the data governance platform (control centre for access, monitoring, compliance), the technology stack (encrypted storage, processing capacity), emerging technologies (federated learning, blockchain for audit and traceability, edge computing), interoperability (open APIs, data standards for federation between cooperatives), and the scalability of the architecture. Infrastructure design touches on five key areas:

- **Storage and data architecture:** defining hardware and software requirements in terms of functionality, cost, reliability, complexity, capacity, scalability and maintainability; an enterprise data model articulated on three levels (conceptual, logical and physical); and data lifecycle policies.

- **Data collection and transformation:** here the infrastructure is defined that must support the collection of data from heterogeneous sources and the entire transformation pipeline (including cleaning, integration, normalisation and enrichment), ensuring compliance with legal and ethical standards.
- **Transparency, provenance and quality:** the platform must make data collection, use and management processes transparent, guarantee structured metadata and define quality metrics contextualised to the final use.
- **Accessibility and findability:** the technical architecture must ensure that authorised data is easily accessible and searchable by users through effective search mechanisms and structured organisation.
- **Auditing and monitoring:** the platform must include systematic auditing capabilities (reviewing the accuracy, completeness and compliance of data with defined standards, tracking changes and detecting anomalies) and continuous real-time monitoring of access flows to detect possible anomalies and breaches.

Key questions

- What infrastructure is needed and which architecture is best suited to our context?
- Has the storage infrastructure been assessed for scalability, reliability and cost requirements?
- Are there policies, standards and procedures for the storage and distribution of data throughout its lifecycle?
- How is the data collection and transformation pipeline governed?
- Are the collection methods compliant with applicable legal and ethical standards?
- Is the provenance of the data traceable? Are quality metrics defined in relation to final use, and is the data organised so as to be easily accessible?
- Are systematic auditing and continuous real-time monitoring of access flows in place?

Security, privacy and safeguards

This includes encryption and anonymisation protocols, access rights management, audit trails and logging. It also establishes the composition of the data governance committee elected by the members, incident response procedures, and the ways in which compliance with regulatory requirements such as the GDPR and DGA is ensured.

Key questions

- What protection measures guarantee data confidentiality, and is the cooperative compliant with regulatory requirements?
- Are data-related processes, accessibility conditions and responsibilities clearly defined and communicated to all parties involved?

Layer 4: COOPERATIVE VALUE CYCLE

Cooperative value proposition – Value cycle and economic model – Collective intelligence and innovation – Members and beneficiaries – Data consumers and market – Non-target stakeholders

Cooperative value proposition

This component is inherited from the social enterprise business model canvas, redefined as the cooperative value proposition to capture its dual nature, which implies value both for members (*why should I contribute my data?*) and for data consumers (*why should I access this data?*).

Key questions

- What is the cooperative's value proposition?
- What specific value do members and data consumers receive?
- What is the cooperative value?

Value cycle and economic model

This component replaces and integrates the "revenue streams" and "cost structure" components of classic business models. It describes the entire value cycle – from contribution to aggregation, on to valorisation and distribution, and finally reinvestment. The value cycle model expresses a complexity that a linear revenue–cost model often fails to capture. It is important to note that the most robust and durable models are those that manage to diversify their sources of income. This clearly affects the complexity of the model, but makes it less fragile in the face of regulatory or market change.

Key questions

- What strategies financially sustain the cooperative?
- Is it possible to diversify sources of income?
- What contractual conditions protect cooperative interests?

Collective intelligence and innovation

This component captures the power of collaborative efforts to generate innovative ideas and solutions, and encapsulates the deep meaning of creating the cooperative. In particular, it captures the added value that emerges from data aggregation and that could not be generated by any single member. Activating collective intelligence can be a source of innovation and positions datacoops as innovative actors in the

technology landscape. Reflecting on the activation of collective intelligence invites members to think further about the skills and capabilities present in the cooperative, and those needed to make the most of the value generated through the initiative.

Key questions

- Does the initiative operate in a regime of interdependence where the aggregated value exceeds the sum of individual contributions?
- How do we turn collective intelligence into concrete innovation?

Members and beneficiaries

This component corresponds to the “customers and beneficiaries” dimension of the social enterprise business model canvas, but is redefined to capture the multidimensionality of the member’s role: data provider, data owner and service beneficiary simultaneously. The dimension is therefore fundamental in questioning the various roles members hold and how these can be exercised without conflicting with one another. It also invites reflection on the value-based obligation of training and capacity building that the cooperative has towards its members.

Key questions

- Who are the key actors, what contribution do they bring, and what motivates them to participate in the cooperative?
- How do we recognise and manage the multidimensionality of the member’s role?
- Do members have the skills and capabilities needed to participate effectively in the cooperative and use its outputs?

Data consumers and market

This component identifies the purchasers or users of the data processed by the cooperative: researchers, public institutions, businesses, application developers. This is because the “market” is not a generic set of customers but an ecosystem of data consumers with very different needs, ethical constraints and access requirements. Access channels, licence conditions and modes of interaction are also described here. In addition, this dimension invites reflection on the (economic) value of the data being shared, and thus on the share of that economic value that can be redistributed to members.

Key questions

- Who are the potential data users, and what agreements are needed to guarantee flexibility and protection of members’ interests?
- Through which channels and under what licence conditions do we reach data consumers?
- What is the value of the data we share, and how much of that value is redistributed to members?

Non-target stakeholders

This component identifies stakeholders who are neither member-beneficiaries nor data consumers but who can influence, or be influenced by, the cooperative's activity: public institutions, other cooperatives, technology providers, local communities, innovation ecosystems.

It is important to consider these stakeholders because collaboration with them could give rise to development opportunities, but also because they are often affected, even if indirectly, by the datacoop's activities.

Key questions

- Who are the other actors affected, even indirectly, by the datacoop's activities?
- Is it possible to collaborate with them to generate value for members?
- What direct and indirect impacts do the datacoop's activities have on them?

Layer 5: COMMUNITY AND TRUST

Trust, engagement and community – impact measurement

Community and trust

This replaces and expands the “customer and beneficiaries engagement” component of the traditional canvas. It describes the strategies for building and maintaining trust, the ways members are engaged and the community-building initiatives. The literature highlights three key dimensions here: operational transparency (dashboards and regular communication), values alignment and tangible benefits (members must perceive concrete benefits), and community building (events, forums and workshops). In this direction, the trust-participation-governance cycle is the social engine of the entire model.

Key questions

- How do we guarantee operational transparency towards members and the wider community?
- How do we make sure members perceive the benefits of participating in the datacoop?
- How do we strengthen and expand the datacoop's community? What initiatives can be put in place?

Impact measurement

This integrates the “impact and outcome measures” and “output measures” components of the social enterprise business model canvas into a single component structured on three levels.

Managing the cooperative's impacts and communicating them, as for other social enterprises, are indispensable elements of the business model, which must be

constantly monitored, managed and measured. Following the principles of the Theory of Change, in order to arrive at impact measurement it may be useful to distinguish first the outputs, then the outcomes (medium-term impacts) and finally the impacts (long-term impacts).

Output measures: the cooperative's operational metrics (data volume, number of members, transactions, platform uptime);

Outcome measures: observable changes in beneficiaries (informational empowerment, access to services, reduced lock-in, improved bargaining capacity);

Impact measures: long-term effects on society and the ecosystem (democratisation of the data economy, digital inclusion, sustainable development).

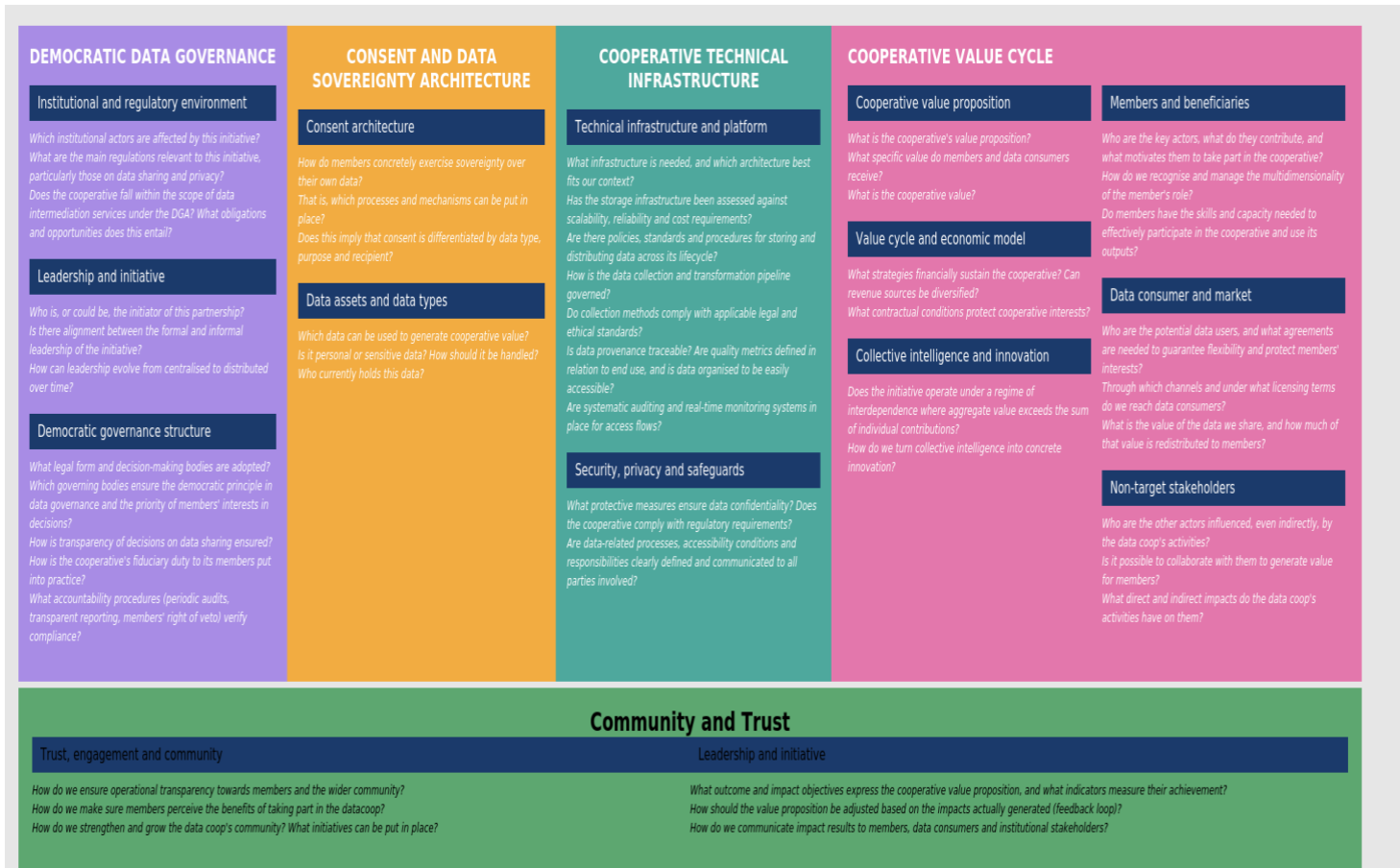
Key questions

- Which outcome and impact objectives express the cooperative value proposition, and which indicators measure their achievement?
- How should the value proposition be modified in light of the impacts actually generated (feedback loop)?
- How do we communicate impact results to members, data consumers and institutional stakeholders?

The canvas defined so far is conceived not as a static structure but as a dynamic system made up of feedback loops between the various layers. Three of these are particularly relevant:

- The first links trust to governance, since trust legitimises governance structures and democratic governance protects members' rights, consequently strengthening trust.
- The second links the consent architecture to the technical infrastructure, since consent choices determine what the platform must be able to do, and technical capabilities define which consent modes can be implemented.

The canvas, presented in its entirety in the following figure, can be used as an operational tool for designing the data coop model. To make it an open and interactive tool, at the link below we provide a downloadable version of the canvas so that it can be used more easily.



[Figure 9 – Data Cooperative Business Model Canvas]

4. Examples and good practices

The previous chapters traced a path that, starting from the conceptualisation of the cooperative model applied to the data economy, arrived at formalising a Business Model Canvas specific to data coops, articulated on the five interconnected layers of governance, consent, infrastructure, value cycle and community. The aim of this concluding chapter is to put this analytical apparatus to the test by applying it to the analysis of some concrete experiences in the Italian and European landscape.

The case studies addressed below aim to offer a wide variety of operational configurations, so as to demonstrate how the proposed business model adapts to very different contexts. They also aim to provide an overview that includes not only formally constituted and recognised data cooperatives, but also organisations that, while not legally falling within the category, embody its principles and anticipate its practices.

The cases we present are divided by sector or by the type of challenges addressed, including health and medical research, agriculture, sustainable mobility, individual

sovereignty infrastructures and DGA intermediation, and finally community economies.

4.1 Health and medical research: MIDATA and Salus.coop

The health sector is one of the most advanced areas of experimentation for datacoops: on the one hand, the informational value of clinical data is enormous; on the other, its sensitivity demands rigorous safeguards. MIDATA in Switzerland and Salus.coop in Spain are two cooperatives operating in this sector with convergent missions but different operational configurations. Their parallel comparison provides further validation of the Datacoop Business Model Canvas proposed above since, even within the same sector, the design choices regarding the five layers presented earlier differ, thereby creating different business models.

MIDATA is a health data cooperative founded in 2015 in Zurich by a group of researchers from ETH Zurich and the Bern University of Applied Sciences. Constituted under the Swiss Code of Obligations as a non-profit cooperative society, MIDATA is today considered the paradigmatic case of a data cooperative based on the Third-Party configuration.

Its statutory purpose, expressed in Article 2 of its statute, articulates a dual mission: to promote the population's digital self-determination by enabling users to use their personal data according to their own wishes, and at the same time to promote the collective interests of account holders by enabling the use of their personal data as a common resource.

Moving through the five layers, it emerges that MIDATA rests on rigorous democratic governance which, supported by an independent ethics committee, prohibits individual monetisation to prevent speculative distortions. This ethic translates into full user sovereignty, with consent managed in a granular, revocable way for each transaction. On the technical side, the system guarantees maximum security through a modular infrastructure, since the IT platform managing storage, access and consent is separated from the data applications, i.e. the apps developed by third parties. Economically, MIDATA adopts a non-profit model in which profits from licences are entirely reinvested in improving the service, with no distribution of dividends. The whole system ultimately converges on the creation of systemic trust, based on transparency and active participation.

Salus.coop, founded in 2017 in Barcelona, is Spain's first health data cooperative and is legally constituted as a consumer and user cooperative society under Catalan Law 12/2005. Its creation responds to an observation: although European citizens legally own their health data, in practice they often can neither access it nor control its use. Salus.coop sets out to fill this gap through a mechanism of informed data donation for scientific research purposes of general interest, in the spirit of what the DGA would later define as data altruism.

While sharing MIDATA's sector and some architectural elements, Salus.coop distinguishes itself by positioning itself in the Open Data configuration – albeit in a sophisticated form that maintains individual control and transparency through ethical licences.

The Salus.coop model proposes a radical approach to health data management, based on the concept of “altruistic donation” and technological decentralisation. Its democratic governance stands out for the integration of ethics into the contractual instrument: the Salus Common Good Data Sharing License, a licence co-designed with citizens that binds the use of data exclusively to non-profit research purposes and public results.

This ethical vision shapes a consent architecture under which the cooperative stores no personal data. User sovereignty is guaranteed by a decentralised technical infrastructure using zero-knowledge protocols, blockchain for notarisation and storage on IPFS (InterPlanetary File System, a system that allows files to be stored and shared in a distributed way without depending on large cloud providers); in this way, the data remains physically in the donor's personal repository. Despite the solidity of its systemic trust, built on a dense network of public partners and radical transparency, the value cycle is the critical point: relying on the logic of donation and on intermediation fees for donor engagement, the cooperative struggles to achieve economic sustainability, highlighting the structural difficulties of Open Data models in the research market.

The comparison between these two organisations confirms that the operational configuration is not a mere technical variable, but a strategic choice that shapes the entire business model. Although operating in the same sector with the same mission, the two adopt opposite architectures at every level. MIDATA relies on encrypted centralisation and the economic negotiation of every single transaction, turning the platform itself into a valuable asset. Salus.coop, by contrast, chooses total decentralisation, entrusting ethical protection to a universal licence and betting on political and reputational value rather than monetisation. This dualism demonstrates that there is no absolute best model: effectiveness depends on internal coherence between declared values, technical infrastructure and economic sustainability.

4.2 Agriculture: JoinData, SAOS, Agdatahub

The agricultural sector is another domain where much experimentation with data intermediation models is under way. Farmers, particularly small and medium-sized ones, suffer from chronic information asymmetries vis-à-vis technology providers. Added to this, the phenomenon of data lock-in (deriving from the fact that farmers are bound to specific vendors who de facto acquire control over farms' operational data) is the common motivation behind the emergence both of data cooperatives such as JoinData and SAOS, and of data intermediaries formally registered under the DGA such as Agdatahub.

JoinData is a Dutch cooperative established to enable farmers to securely pool and control the data from their farming activities, facilitating collaboration with

agribusiness and innovation partners. It is particularly relevant because it exemplifies the Federated configuration: the data remains in the local systems of individual farmers (or of their associated agricultural cooperatives), and the JoinData platform plays a role of intermediation and orchestration of access authorisations.

This model transposes cooperative principles into the B2B context of agribusiness, adopting a federated configuration that aims to balance the interests of agricultural enterprises of different sizes. Its governance is developed on two levels (internal and federated), focusing not on individual representation but on balancing interests among members who may differ greatly in size and bargaining power. This structure enables an extremely granular consent architecture, in which the farmer retains total control, deciding case by case which datasets to share and with which partners, for what purpose and for how long.

At the technical infrastructure level, JoinData is based on a decentralised model: the platform does not centralise the data but acts as an orchestrator of APIs and protocols, leaving the information in members' local repositories to preserve their sovereignty and reduce fixed costs. The value cycle thus feeds on a powerful network effect, with the cooperative acting as a fiduciary intermediary to negotiate better conditions with technology providers, offering members mutual benefits such as benchmarking and the end of data lock-in. In this scenario, trust shifts from the personal to the inter-organisational level, turning the cooperative into a protected space guaranteeing the collective security of informational assets.

SAOS (Scottish Agricultural Organisation Society) is a Scottish cooperative operating in agriculture that has developed an exemplary case of data cooperation: it aggregates its member farmers' information to create a real-time livestock traceability database covering the entire food supply chain, up to the point where the animals enter the food chain.

SAOS sits halfway between the Member-to-Cooperative and Federated configurations: traceability data is aggregated in a central database managed by the cooperative, but for the direct benefit of the members and the supply chain as a whole. The case is particularly interesting because it illustrates how cooperative data can become an instrument of sectoral compliance (traceability is a regulatory requirement in the food industry) and, at the same time, of competitive positioning (traced supply chains have better access to premium markets).

The business model here envisages governance that reflects a federated structure in which decisions on data use are taken democratically by the associated cooperatives, guaranteeing widespread representation of the farmers. On the consent and data sovereignty side, the model stands out because it processes not personal data but operational business information. The technical infrastructure consists of a centralised database that monitors the entire supply chain in real time, integrating data flows between farmers and large-scale retailers. The value cycle translates into concrete benefits for members: reduced regulatory compliance costs, greater bargaining power vis-à-vis retailers, and a strategic overview of national production.

Agdatahub is a French data intermediary officially registered in June 2024 in the European register of data intermediation services under the DGA, operating in the agricultural and agri-food sector. Its most visible difference from JoinData is its legal form: Agdatahub is constituted as a *société par actions simplifiée* (simplified joint-stock company), not as a cooperative. This choice reflects a more commercial structure while still acting as a neutral intermediary.

The comparison with JoinData is valuable because, once again, although both operate in the same agricultural sector and pursue similar objectives (i.e. facilitating data exchange among producers, reducing data lock-in, adding value to the supply chain's informational assets), they adopt radically different legal and governance architectures.

The Agdatahub model represents the application of DGA principles in a commercial context, and differs sharply from the cooperative model because of its nature as a capital company. Its governance follows shareholder logics rather than mutual ones: neutrality and the absence of abuse are guaranteed not by the corporate structure but by strict compliance with the external constraints imposed by the DGA and by periodic audits.

This approach is then reflected in a consent architecture based on a purely contractual relationship between provider and client, in which the farmer retains granular control over the data but interacts with the intermediary as with a neutral service provider. In the same vein, the value cycle is profit-oriented while generating indirect benefits for farmers through greater market efficiency. The community and trust system here springs not from democratic participation but depends on regulatory compliance, registration in the EU registers and official recognition as a neutral intermediary under European rules.

The comparison between these cases brings into focus the crucial question linked to the DGA's structural separation principle. Does this principle – conceived for traditional commercial intermediaries – make sense for cooperatives too? Agdatahub, as a joint-stock company, is a natural addressee of the neutrality rules: having no mutual link with its client data providers, it needs external guarantees to demonstrate that it does not use data to its own advantage. JoinData and SAOS, by contrast, exist precisely to bring direct benefit to their members: prohibiting them from using the data contributed for purposes other than its mere transmission would contradict the logic of their existence. The proposal to turn structural separation into functional separation, contained in the Digital Omnibus, can be read precisely as an attempt to resolve this tension.

4.3 Mobility: POSMO, Skjutsgruppen

The urban mobility sector is particularly fertile ground for datacoops because mobility is simultaneously an individual phenomenon (individual journeys) and a common good (air quality, urban planning, environmental sustainability). Mobility data, today almost always in the hands of Google Maps or private operators, is crucial for urban policy decisions. Four experiences – POSMO in Switzerland,

Skjutsgruppen in Sweden, Driver's Seat in the United States and Eva Coop in Canada – show complementary and contrasting applications of this logic, including a failure case rich in lessons.

POSMO Coop (Switzerland) is a mobility data cooperative created with the explicit aim of developing an ethical model for the collection and use of mobility data, prioritising the security and rights of data producers. It is an emblematic case of bottom-up data stewardship: members collectively decide how their travel data is managed and for what purposes it is used.

It is indeed a virtuous example of cooperation applied to urban mobility, where individual data is transformed into a common good. Democratic governance allows citizen-members to directly influence transport policies, actively participating in the choice of research projects and the public purposes to which the information collected is put.

Skjutsgruppen (*"the ride-sharing group"*), founded in Sweden in 2007, is an association that facilitates ride-sharing among motorists. The case is interesting because, while not formally a data cooperative within the meaning of the DGA, Skjutsgruppen incorporates numerous practices that trace back to the cooperative data paradigm and leverages a unique feature of the Swedish context – that 75% of the population over 16 belongs to one or more associations – to build its value proposition.

This model reinterprets data sharing and mobility in a purely community-based key, adopting the flexible structure of the association rather than the formal cooperative form. Its governance rests on participatory mechanisms distributed nationwide, complemented by strategic partnerships with local authorities, NGOs and territorial organisations. As regards consent, the platform stands out for a radical choice: access requires identity verification, but traditional algorithmic rating systems have been eliminated. In their place, direct interaction is promoted, letting the relational dynamic develop on the basis of natural trust between members. The technical infrastructure combines an internal matching platform with the publication of requests and offers on the official Swedish open data portal; in this way, the association operates as a source of open data fed from below. The value cycle generates a widespread impact, offering economic savings and accessibility to individuals, providing municipalities with valuable data for planning sustainable mobility, and reducing CO2 emissions for the benefit of the environment. Finally, trust is not built artificially through technology but capitalises on pre-existing social capital and the strong associative tradition of the Swedish community.

These two case studies, like the two international experiences of Driver's Seat and Eva Coop cited earlier, show different strategies for addressing the problem of the availability of mobility data for public interest purposes while avoiding big tech monopolies.

In particular, POSMO builds a dedicated formal cooperative, with democratic governance and proprietary infrastructure, positioning itself as a specialised intermediary. Skjutsgruppen, on the other hand, operates as a pre-existing

association incorporating a data layer as a natural extension of its activity. In this context, economic sustainability typically requires coupling mutuality with a structured dialogue with the public sector (cities, regions or transport agencies), since mobility data generates mainly public benefits that the private market alone can hardly value adequately.

4.4 Intermediaries under the DGA: Tritom, Nidhas

This section addresses two experiences that share the fact of operating as data intermediaries under the DGA, showing the variety of configurations that the DGA itself admits among its intermediation service providers.

Tritom, managed by the Finnish company Dataspace Europe OY, was the first European data intermediary officially registered in the EU register of data intermediation services, in compliance with DGA requirements. It is a limited liability company, and in its notification of activity it declares that it includes data cooperative services among the categories of intermediation services offered. However, structured information on a data cooperative as a company or enterprise is not easily found on Tritom's website: Tritom describes itself rather as an ecosystem and integration platform, a meeting place for developers of data-based services and data holders, whose value cycle is oriented towards enabling transactions between third parties rather than the mutualistic redistribution of value.

This case raises a point relevant to the regulatory debate: the DGA allows an entity to register as an intermediary offering data cooperative services without necessarily being constituted as a cooperative in the legal sense. It is therefore possible, at least in theory, to develop cooperative logics inside legal containers other than the formal cooperative – a possibility already discussed above, which the Digital Omnibus would make even broader.

Another valuable model is that of **Nidhas**, a Hungarian data intermediary, likewise registered in June 2024 as a limited liability company under the DGA, dedicated to the general intermediation of data between holders and users. Like Agdatahub and Tritom, Nidhas must operate totally neutrally, and must not use the data for its own commercial purposes, guaranteeing fair and non-discriminatory access.

The cases presented here also illustrate a more general phenomenon linked to registered DGA intermediaries: the number of registered intermediaries has grown slowly, with a predominance of capital companies over cooperatives in the strict sense. This gap highlights that the dialogue between expressly cooperative organisations (such as the Polypoly case described earlier) and commercial actors like the two presented above is not a merely formal question. In the DGA paradigm, intermediation can be carried out both by mutual organisations, oriented by nature to the interest of their members, and by for-profit entities, which assume neutrality as an operational strategy imposed by the regulator. This structural divergence translates into opposite mechanisms for building trust, different logics of value redistribution and different relationships with data providers.

The current imbalance in favour of capital companies confirms that today's regulatory framework does not yet fully enable the spread of data cooperatives. This makes the adoption of the simplification proposals discussed in section 2.4.5 particularly urgent: regulatory evolution is needed to recognise and protect the specificity of the cooperative model, and to avoid forcing it into bureaucratic categories designed exclusively for commercial intermediaries.

4.5 Aggregation as community defence: Pescadata

Finally, it is important to bring to light a cluster of organisations that apply cooperative data logics to contexts where the main motivation is not the maximisation of economic value, but the defence of communities otherwise excluded or marginalised from data-driven decision-making models. An emblematic case study is **Pescadata**.

Pescadata was born from the initiative of the Mexican NGO Comunidad y Biodiversidad (COBI), a long-standing marine conservation organisation in Mexico that has worked for years in partnership with artisanal fishing communities, in particular on the design and management of the *zonas de refugio pesquero* (temporary fishing reserves). The Pescadata project has its roots in a consultation process launched by COBI with fishing cooperatives in 2018; the app was officially launched in 2020, after two years of co-design with the community. Through subsequent consultations with other Mexican cooperatives, the app has grown into an integrated tool capable of combining data recording, sharing of community knowledge, and market functions. This is a qualitatively important point: unlike many technology projects imposed from above, Pescadata was born as a bottom-up request from a fishing cooperative, and grows through the incremental addition of features in response to real community needs.

The scale reached is also significant, with over 2,500 registered users across Mexico at the start of 2024 and active expansion into Honduras, Colombia and Peru. The potential base is considerable, since Latin America is home to over 1.2 million artisanal fishers, and Mexico alone to more than 250,000 people organised in around 4,000 fishing cooperatives.

An important turning point for the project was the organisational transition in 2023, when COBI transferred the technology to the social enterprise Servicios Digitales Para la Pesca Sostenible S.A.P.I. de C.V. to scale up its implementation so as to become economically sustainable while preserving its original values.

Analysing this model through the Data Cooperative Business Model Canvas, what clearly emerges on the governance side is a participatory, multi-stakeholder arrangement developed from below with the fishing community and designed following "the ten principles of platform cooperatives and the design principles for systems change", so as to bind itself explicitly to a framework of Platform Cooperativism principles. This bottom-up involvement consequently shapes a consent architecture based on full community sovereignty, since the fishers contribute sensitive data on catches and fishing practices relevant to biological

sustainability and national statistical management. In addition, a particularly innovative aspect emerges: the recognition that the data generated by fishing cooperatives represents not just information but traditional knowledge accumulated over generations of resource management. In this sense, data sovereignty is articulated not only in the defence of individual privacy but also in the protection of traditional ecological knowledge, thereby challenging the concept of data colonialism described at the start of this report. The technical infrastructure is configured as a multifunctional tool combining data collection with immediate operational services – including an online marketplace for catches and equipment, a digital fishing logbook and a repository of community solutions for adaptation and innovation initiatives – transforming individual local knowledge into a trans-community common good. The value cycle thus generates a multi-level impact: it offers fishers a commercial outlet and regulatory support, provides the state with useful data for environmental policies, and gives communities a greater voice in decision-making processes. Finally, trust does not rest on public institutions or research bodies (as in the Nordic or Swiss models), but is founded on relational proximity, territorial rootedness and COBI's historical credibility as a marine conservation NGO – and above all, more concretely, on tangible evidence of the mutual benefit it delivers.

4.6 Comparative synthesis and final considerations

From the internal and cross-cluster analysis of the cases presented, several observations emerge that consolidate the empirical evidence for the principles and configurations described in chapters 2 and 3. In particular:

- **No configuration wins over all the others.** The analysis of the various cases confirms that the five operational configurations cannot be ranked hierarchically: the choice of configuration depends not only on the mission or sector but on the institutional maturity of the context in which the initiative sits. For example, in contexts with strong public institutions, public-technical or regulated intermediation models are more sustainable, while in Global South contexts – where public administrations are often weak but cooperatives are solid organisational actors – models like Pescadata, which leverages Mexico's 4,000 fishing cooperatives, prove particularly effective.
- **Interdependence of the layers.** In none of the cases analysed can a weak layer be observed without it affecting overall performance. The successful cases (MIDATA, JoinData, SAOS, Pescadata, POSMO, Driver's Seat in its active phase) all share a common feature: a design coherence running through the five layers, in which governance, consent, infrastructure, value cycle and trust mutually reinforce one another. The failure cases, or those with still-uncertain sustainability, display the mirror-image characteristic: one or more structurally undersized layers producing knock-on effects. PolyPoly probably has the most sophisticated technological architecture of all those presented in this report, but this technical excellence did not translate into a critical mass of users; without critical mass the value cycle did not close, and without the value cycle the

business model did not hold. Conversely, the transition Pescadata undertook in 2023 was a major organisational transformation precisely because it recognised in time that the initial model, financed exclusively by grants, was not sustainable in the long run. This is why the initial design must attend to all five layers simultaneously: the feedback loops theorised in Chapter 3 manifest themselves in practice as causal chains that amplify both strengths and weaknesses.

- **Sustainability as a recurring challenge.** All the cases analysed have had to invent hybrid strategies to guarantee the economic sustainability of the model. None has found a “pure” model that works on mutuality alone or on the data market alone. What emerges from the analysis of the longest-lived datacoops is a good rule of thumb: build at least three complementary sources of income. MIDATA combines reimbursements from healthcare facilities, third-party licences and returns on invested assets. JoinData combines membership fees, commercial intermediation for technology providers and value-added services for members. POSMO combines member contributions, partnerships with city administrations and funded research projects. Pescadata, after the 2023 transition, combines SaaS for fishing cooperatives, institutional philanthropy grants and facilitated access to blue economy impact finance mechanisms. By contrast, the single-revenue cases are the most fragile. Salus.coop long relied almost exclusively on Catalan institutional support and research project fees, which is precisely why its founder states that “sustainability is not yet guaranteed”. PolyPoly staked almost everything on redistributing royalties from the transfer of personal data, a revenue line that presupposed a critical mass that was never reached. Sustainability, in this sense, is not a state but a process of continuous transformation. The Digital Omnibus, with its proposal to turn structural separation into functional separation, addresses precisely this need: it allows data coops to flank pure intermediation services with value-added services, structurally enabling the diversification that today is laboriously constructed through organisational workarounds.
- **Datacoops as instruments of political representation.** With the Pescadata case as the most radical and technically advanced, the platform becomes a vehicle of representation for communities that are historically invisible in national statistical systems or are aggregated into residual categories. The political dimension in these contexts is potentially very significant because it links the technical discourse of data governance to that of social justice and democracy. Indeed, a datacoop makes sense not only where there is a data market to redistribute, but also and above all where there is a community to represent that today finds no voice in data-driven decision-making processes. This would take a further step beyond the user-centric approach towards a humanity-centric one – placing the person, with their dignity, relationships and community belonging, at the centre of the organisational architecture.
- **The public sector as a strategic buyer of cooperative data.** In almost all the successful cases, the public sector is a leading buyer or partner: the city of Zurich for POSMO, national and regional governments for Skjutsgruppen,

sustainable fisheries management authorities for Pescadata, public research institutes for MIDATA and Salus.coop. The capacity of public bodies to purchase cooperative data on fair terms – and thus return value to the cooperative – is a little-explored but decisive policy lever that deserves to be brought to the centre of the debate.

- **Replicability versus scalability.** A cross-cutting element emerging from the comparison between Pescadata and the European projects is the former's rejection of the logic of global scalability in favour of a local replicability of the model, contextualised in other countries of the region. This conceptual inversion mirrors the deep nature of datacoops: rather than aiming at monopolistic expansion, the model promotes alignment with the ICA's sixth cooperative principle ("cooperation among cooperatives"). The goal thus becomes the creation of a federation of local organisations rooted in their own territories, interoperable through shared technical standards but rigorously autonomous in governance.

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