Improving Global Governance:

Data Cooperatives for Global Cooperation

Task Force 4: Science and Digitalization for a Better Future

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Abstract

In response to the growing digital, economic, and social divide accelerated by the rapid integration of artificial intelligence, that will significantly impact the socio-economic situation in the G7 countries, this policy brief proposes the creation of data cooperatives. Data cooperatives decentralise data management and empower individuals and communities to own and control shared data resources. In contrast to traditional centralised data management, this model promotes ethical data use and inclusive participation in the digital economy and supports the Sustainable Development Goals. Our key recommendations for the G7 include creating a legal framework for data cooperatives, providing financial and technical support, promoting international data sharing, integrating cooperatives into global policy, investing in research and development, and integrating blockchain and AI for security and transparency. Implementing these strategies will enable the G7-states to mitigate the serious socio-economic risks connected to changes brought by the technological advancements. This positions the G7 as leaders in advancing the global socio-economic systems to AI-driven, equitable digital economies and societies, advocating a people-centred world.

Introduction

The emergence of artificial intelligence (AI) has led to significant changes in all sectors ranging from healthcare to finance. It has fundamentally altered global

structures. Its rise has contributed to widening digital, economic, and social divides[1]. The fast pace of technological progress has meant that understanding what AI really is and how it can be used effectively is largely confined to those who are already among the technical elite.

The role of artificial intelligence in our lives increases, so does its social and economic impact. As data becomes not only the basis for training artificial intelligence but is shaping by those important parts of our lives, it is becoming an increasingly important social and economic asset. Who controls the data, controls the reality – though controls our lives.

We need to develop governance and safety mechanisms for collecting data that neutrally reflects our decisions and actions. Otherwise in an increasingly evidence-based world the needs and priorities of us as individuals and our communities are not equally weighed against the interests of economic corporations and public institutions (Fung and Stein, 2023)

Data responsibility will need to be managed in a collaborative way, so that a wide range of voices and perspectives are able to contribute to the foundational datasets that drive our AI systems.

Current data governance systems are often controlled by a few dominant actors, leading to concerns about privacy, equitable access, and fair use of data. They are based on centralized models, with one single authority managing and controlling data. An increasing number of governance experts envision more participative approaches like decentralized and hybrid models that combine central oversight with regional or local autonomy. Other approaches like federated governance for more adaptive governance to regional or local needs and open data governance in public institutions as well as cloud-based systems for managing information across multiple platforms are increasingly utilized.

The concept of data cooperatives emerges as a practical solution to implement these evolving governance aspirations and for bridging the growing digital divide. Data cooperatives are collective organisations in which the control and management of data is decentralised, and the data ownership remains with data originators (Pentland and Hardjono, 2020).

People-centred data cooperatives ensure that the value derived from data equip a wider part of society with collective benefits. By giving individuals and their communities control over their data, these cooperatives enable more equal participation in the digital economy and promote innovation and social welfare. A key

[1] The divide refers to the socio-economic gap between those who have access to the Internet and related technologies and those who don't, either due to a lack of infrastructure or the necessary knowledge. This gap perpetuates inequalities in economic opportunity and social participation, exacerbating socio-economic disparities.

component that ensures the efficiency of data cooperatives is their integration into a so-called Prosperity Data Networks (PDNs). Via PDNs, the different data cooperatives can learn from each other, exchange their data in a protected manner, sell managed access to or train AI-systems with it. (Stein et al 2023).

As such, data cooperatives significantly advance the Sustainable Development Goals (SDGs) by promoting inclusivity, participation, and shared responsibility. They impact SDG 11 (Sustainable cities and communities) by improving urban environments, SDG 10 (Reduced inequalities) through cooperative data access, SDG 17 (Partnerships for the Goals) through collaborative approaches, SDG 4 (Quality education) by improving learning outcomes and information sharing and SDG 8 (Decent work and economic growth) by using all facets of our extensive economic and social knowledge (Stein et al 2023).

Data Cooperatives

Data cooperatives decentralize data ownership and collective data management so that people and their communities can control and use shared data resources. People participating in these cooperatives can influence how their data is used, ensuring that it serves their collective interests and that ethical and security standards are upheld.

Each data cooperative manages its members' data, while the members individually and collectively decide the data oversight and use, for example, governance and who, how, when, and why the data may be used. The transparency and integrity of these decisions can be ensured by recording them immutably on a decentralized ledger. AI can help process vast amount of data and automate the decision-making process, ensure that privacy is maintained, and individual and collective goals of the members are met.

Members in data cooperatives have an equal say in how the data is used. Participation is organized using agile methods (from the software industry) and methods for interdisciplinarity. Today marginalized groups are often excluded from traditional decision-making processes. Data cooperatives can empower these groups by giving them access to data and platforms to voice their concerns and ideas, and to express their perspectives and priorities. This empowerment is essential to ensure that solutions are equitable and consider the needs of all members of the community. Data cooperatives are therefore participative and increase the sense of mutual responsibility and accountability among their members.

Data cooperatives provide a platform, where in a regulated manner, members of a data cooperative can contribute, access, and analyse data that can be used to solve individual and collective problems. Such a body of information in the hands of a community of individuals can be an extremely powerful public good for collectively generating knowledge and as a tool for identifying problems, understanding their scale and in turn developing the right focus for action. For example, in a community

with an environmental problem, environmental data cooperatives can collect local environmental data, share it with their members and with other data cooperatives through Prosperity Data Networks to look for sources of pollution, solutions developed by other data cooperatives and develop evidence-based plans for solutions. Or, in a context of weakening social capital in communities, sharing relational data (knowledge, skills, interest, etc.) can help rebuild a new community tissue (Bertolaso and Boschetto, 2021).

Data cooperatives facilitate the sharing of information both within the community and with external stakeholders. This shared knowledge can include best practices, lessons learned and success stories that can serve as inspiration and guidance for other communities facing similar challenges (Fung et al., 2022). Transparent information sharing builds trust among members and with external bodies, which increases the credibility and influence of the cooperative. Therefore, data cooperatives foster collaboration not only among their members, but also with other cooperatives, organizations, and government agencies. By pooling resources and expertise, they can tackle larger, more complex problems more effectively. This synergy maximizes the impact of their efforts, leading to more sustainable and lasting solutions.

Prosperity Data Networks (PDNs)

PDNs exponentially increase the benefits of data cooperatives, creating a broader platform for collaboration, innovation, and shared prosperity. They are AI-powered digital data repositories that connect individual data cooperatives into larger networks (Stein et al., 2023). These networks expand efficiency, reach and impact of data cooperatives by facilitating the sharing of data and insights across communities.

PDNs advance the sharing of data among data cooperatives. One of the key benefits of PDNs is that they bring together large amounts of data from multiple sources. By using blockchain, the security and integrity of these data exchanges is ensured. With the help of AI, relevant data across different cooperatives can be analysed to identify trends and insights, enabling seamless data integration and improved collaboration, that can significantly boost innovation within communities and help address important societal challenges like environmental sustainability, infrastructure development, affordable healthcare, and education.

Standardized protocols establish interoperability within PDN’s and the large network of PDN’s. Blockchain technology reinforces interoperability by providing transparent and secure frameworks for data transactions across different systems within the PDN ecosystem. AI enables the automatic translation of data formats between different systems, optimizing exchanges and integration within the PDN ecosystem.

PDNs connecting data cooperatives encourage collaboration. By bringing together people with different backgrounds and expertise, data cooperatives provide a

platform for collaborative problem solving. This collaboration not only leads to more resilient outcomes, but also fosters a sense of community among members. As they work towards common goals, trust naturally develops through interactions sharing perspectives and experiences resulting an increasing potential for sustainable resilience and prosperity.

Trust Building by implementing Data Cooperatives and PDNs

Data cooperatives empower people and their communities by giving them control over their most valuable asset in the digital age: their data. While the data cooperative adheres to rigorous regulatory frameworks like GDPR people can track how their data is being used, managed, and protected. A dashboard accessible to all cooperative members gives them the opportunity to monitor real-time updates on data usage and data sharing within the cooperative and with external entities.

Participation and engagement are fundamental to building trust within communities. Hence, they are more than just operational aspects of data cooperatives; they are the heartbeat that increases trust between members, especially in the context of data exchange-based collaborations. The participative nature of data cooperatives, where members have a say in decision making processes, fosters a sense of ownership and responsibility. This involvement is critical to building a foundation of trust, as people are more likely to trust systems in which they are actively involved and where their voice is heard and valued.

The participation process in the governance of data cooperatives uses AI algorithms to gather feedback from a diverse range of members, making sure that all voices are heard in the governance process. Additionally, blockchain technology creates an immutable ledger of all data transactions within the cooperative. This includes entries on data access, updates, and sharing, ensuring that all data interactions are traceable and verifiable. With blockchain a transparent audit trail is available for members to verify the integrity of governance processes.

This transparency is critical to allaying fears and suspicions about data misuse - a common concern in the digital age. It also helps set clear expectations and standards for data use. People, as members of a data cooperative, feel more empowered, develop a sense of belonging and commitment and are more likely to participate actively and contribute positively to the goals of their cooperative. Participation strengthens data cooperatives as member-owned and governed institutions able to respond to and manage conflict and build and keep trust.

To manage these collaborations efficiently, implementing smart contracts (Garnett, A. Grace, 2023) in data cooperatives automates various operations, including the enforcement of data sharing agreements and permissions management. Smart

contracts automatically execute pre-defined conditions, reducing the need for intermediaries and increasing efficiency. This implementation significantly reduces operational costs and minimises the likelihood of disputes, resulting in a legally enforceable data governance and digital rights management framework.

For data cooperatives as socio-economic systems we propose the creation of community-owned and governed data marketplaces based on the underlying concept of PDNs. Such cooperative marketplaces ensure secure data exchange and economic use under strict guidelines. Sale profits benefit the individual members as well as their community to fund further data collection and support cooperative activities.

Case studies: Global examples of Community Networks

Recent discussions and policy processes concerning data cooperatives emphasize their potential role in balancing power dynamics in the data economy and enhancing community control over data. Data cooperatives are being recommended for their ability to navigate the complex landscape of data rights and collective governance, providing a framework that could empower individuals and communities against the backdrop of digital and data-driven transformations (compare Trait, 2021, Ada Lovelace Institute, 2021). Data cooperatives will play a major role in promoting data sovereignty as they act as a tool for communities to retain control over their data and overcome the traditional power imbalance in the data economy (Calzada, 2021).

In this evolving context, data cooperatives are being positioned not just as economic entities but as crucial instruments for ethical data governance, highlighting their potential to mediate between individual data creators and large data-utilizing organizations. This approach could pave the way for more equitable distribution of the benefits derived from data, aligning with ongoing international efforts to manage data as a collective resource.

We demonstrate two case studies of organized collaboration. In both case studies, the collaborative model, whether in data management or healthcare, illustrates the potential for greater efficiency, equity, and community engagement. The examples showcase valuable insights about how collaborations naturally evolve into data cooperatives. Set up to address various socio-economic challenges, sharing data improved impact and outcomes for regional and global cooperation.

Case Study 1: Fondazione Compagnia di San Paolo

Fondazione Compagnia di San Paolo[2], an Italian philanthropic foundation based in Turin, is an example of how collaboration with data can be aligned with and advance

[2] https://www.compagniadisanpaolo.it/it/

the UN Sustainable Development Goals (SDGs) (Bersanetti et al., 2022). The Foundation has made a strategic shift to focus its efforts on three main areas: Planet (addressing the overarching challenges facing the future of the planet and future generations through effective action that contributes to environmental protection, health system development, research, and innovation performance), People (promoting prosperity and social cohesion, fighting poverty and reducing inequality) and Culture (supporting culture and the arts, creativity and heritage). This focus on the SDGs has been driven by innovative strategies that emphasize data-driven decision-making.

The Foundation's approach highlights the potential that lies in using shared, ethically managed data to make informed decisions in philanthropic endeavours. Using data cooperatives and matching internal and external data from institutional sources, Fondazione Compagnia di San Paolo ensures that its goals are aligned not only with the broader SDGs, but also with the specific needs and priorities of the communities it serves. This alignment enables the Foundation to measure over time and maximize its impact on critical global challenges such as climate change, social inequality, and cultural development. Starting from KPIs, the Foundation has a strong commitment to public participation and citizen engagement, it releases a digital platform and a yearly impact report.

The Foundation's model demonstrates how data collaboration can enable organisations to leverage diverse data sets for comprehensive analysis, leading to more targeted and effective philanthropic interventions. As stated in its Data Strategy 2023-2030, Fondazione Compagnia di San Paolo is setting a precedent for how foundations can use data collaboration to improve their contribution to global sustainability and community well-being.

Case Study 2: Federally Qualified Health Centers

Federally Qualified Health Centers (FQHCs)[3] in the United States are an example of how collaborative structures can have a significant impact on communities. FQHCs are community-based health care centres who provide primary care services in underserved areas to vulnerable populations (Calvo et al). FQHCs operate under a patient-centred governance structure, with a board of directors composed largely of patients who use the health centre's services and reflect the needs and aspirations of the community they live in (Michener et al., 2019).

These centres are designed to reduce barriers to comprehensive health services such as cost, lack of insurance, distance, and language. They provide services regardless of a patient's ability to pay, with fees based on a patient's income level. The structure of FQHCs ensures community participation in health care strategy, planning and implementation of decisions and is consistent with the core principles of

[3] https://www.fqhc.org/what-is-an-fqhc

data cooperatives, which emphasize community involvement and control over resources.

Additionally, the FQHCs have been organized in so called Breakthrough Collaboratives which allow the 8,000 individual health centres to collaborate on specific topics of interest to people in each health centre. The outcome has been an extraordinary progress on achieving outcomes on a wide range of health and healthcare themes by activating multi-sector partnerships. (Michener et al., 2019)

The success of FQHCs underscores the benefits of cooperative structures in improving access to essential services. By involving the community in governance, these centres ensure that the services provided meet the needs of community members. The model demonstrates how collaborative structures can lead to more equitable and efficient delivery of services that contribute to the overall health and well-being of the community.

Recommendations for the role of the G7 in promoting data cooperatives

As a grouping of the world's leading economies, the G7 is in a unique position to take a leadership role in the development and implementation of data cooperation. Our recommendations for the G7 are:

1. Practical research on development of data cooperatives

   To research and develop practical collaborative digital structures, we recommend the financial and organisational support of digital cross-border sandboxes for data cooperatives.

2. Legal framework for data cooperatives

   We recommend the establishment of an institution dedicated to the development of standards and regulatory frameworks that facilitate the creation and operation of data cooperatives. These frameworks should ensure seamless integration into the digital economy and compliance with data protection rules.

3. Promote international cooperation on trustworthy data sharing.

   G7 plays a crucial role in encouraging and facilitating alliances among national/local institutions, corporates, universities, and non-profit organisations for data cooperatives between countries to establish a global culture of trustworthy data sharing and cooperation.

4. Integrate data cooperatives into global policy agendas

We recommend including data cooperatives in global discussions on digital governance and sustainable development and highlight their contribution to the SDGs.

5. Establish secure, automated data cooperatives with AI and blockchain

   We recommend using AI and blockchain to uphold the integrity of data exchanges and decision-making processes, enhancing collaboration, innovation, and trust among cooperative members within G7.

Pioneering a conscious path towards a sustainable resilient and prosperous future

What was perceived and criticised as science fiction yesterday has become reality today in the age of exponential development of artificial intelligence - faster than most of us expected. Data increasingly becomes not only a passive result of our lives and overall existence, but especially through AI trained based on it, data will actively shape our realities and lives in the future - in ways we can't even imagine yet.

AI inferences are as good as the data AI is trained on. When AI is trained primarily on data aggregated by large tech or powerful states, or when trained on non-representative discussion forums like Reddit, AI is perpetuating biases that are not in the broad interests of common good. Strong AI, and later Artificial General Intelligence (AGI), trained on current sources of data will not ensure the diversity-based resilience of humanity. By training our AI systems based on data that reflects us and our perspectives of reality in the most neutral and participative way - in form of Data Cooperatives - we can systematically balance the power of AI and its socio-economic value to make its applications and outcomes accessible for everyone. We are positioned to mitigate the risks associated with Strong AI and AGI when these are trained on data based on a participative governance. Only when AI training data includes data cooperatives can AI become a part of our socio-economic systems - leveraged by us as a tool for humanity and not humanity leveraged as a tool for AI.

Nature demonstrates that viruses typically do not aim to structurally harm their hosts. Similarly, by applying this natural principle, Data Cooperatives can act as an intermediate layer between humanity and AI, resembling our immune system. This layer can leverage the positive value of Artificial Intelligence while managing the internal and interconnected balances of our socio-economic systems.

Data Cooperatives and Prosperity Data Networks are evolving collective governance concepts, designed to be more adaptive, anticipative, responsive, and dynamic than existing more static and less participative data governance concepts.

Implementing data cooperatives will reinforce the G7's status as a leader in promoting equitable and sustainable digital economies. This approach will prepare the way for leveraging the advances in AI and digital technologies for the benefit of our regional and global communities.

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