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## Book

# The digital social economy - managing and leveraging platforms and blockchain for a people-centred digital transformation

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# Working Paper

**The Digital Social Economy -  
Managing and Leveraging Platforms and Blockchain  
for a People-Centred Digital Transformation**

Samuel BRÜLISAUER, Anastasia COSTANTINI & Gianluca PASTORELLI

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# **The Digital Social Economy - Managing and Leveraging Platforms and Blockchain for a People-Centred Digital Transformation**

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## **Abstract**

*"Digitalisation and other advanced technologies are increasingly reshaping our economy, including social economy enterprises. Disruptive technologies can inspire the social economy and vice versa. Blockchain for instance carries an intrinsic decentralisation approach that could have many implications for services and generate a high social added value through traceability, fair pricing, commonly recognised and verified standards and democratization of access to services and products in all societies and areas."*<sup>2</sup>- Ms Ulla Engelmann, Head of Unit for Advanced Technologies, Social Economy and Clusters, European Commission, DG Grow

In the first two decades of the new century digital technologies have started to reshape work, leisure, behaviour, health, education, money, governance, and other aspects of human life. As people and businesses start using digital appliances for all kinds of interaction, an increasing amount of communication and value exchange shifts to the digital realm. This megatrend holds many promises to spur innovation, generate efficiencies, and improve services, and in doing so boost more inclusive and sustainable growth. But these technologies also tend to disrupt traditional ways to organize our economy and society, entailing important consequences for people, organisations and markets, and raise important issues around jobs and skills, privacy, security<sup>3</sup>.

We use the term digital transformation to describe these social, cultural, and economic changes resulting from digital innovations, and identify four socio-technological areas in which people are particularly affected by this transformation: work and income goods and services, money and finance, and state and governance. Digital platforms and blockchains (and other distributed ledger technology) are two of the most impactful technologies. Because of the astonishing possibilities these technologies offer, observers regularly fathom that it is not only unfeasible but also undesirable to 'stop' the digital transformation. Rather, it is argued that digital technologies and their impacts must be actively managed and leveraged to ensure their alignment with people-centred development and sustainability.

In this context, a growing number of social economy innovations aim to create an internet and digital appliances that put individual users and society first. Social economy enterprises and organizations are either based on participatory governance where users are ultimately in (partial) control over the platform/technology, or bound by a statutory purpose asserting the priority of social and environmental goals before financial returns. The digital social economy innovations discussed in this paper aim to realize this vision in the four areas undergoing digital transformation. Our analysis is

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<sup>2</sup> From the opening address of Ms Ulla Engelmann, during the Workshop "Blockchain, digital social innovation and social economy. The future is here!" On 7th February 2019 organised by Diesis at European Economic and Social Committee, Belgium.

<sup>3</sup> OECD, 'OECD Digital Economy Outlook 2017', 2017.

informed by insights from the workshop organised by Diesis on “Blockchain, digital social innovation and social economy. The future is here!”, as well as case studies elaborated in close collaboration with various digital social economy enterprises. The study finds a vivid variety of digital social economy enterprises, and important potential for further applications of social economy principles in the digital realm. Yet the realization of this potential depends on whether these enterprises manage the critical challenge to achieve sustainable and user-centred growth. We therefore conclude with a discussion of this challenge and some recommendations for policy, organization and entrepreneurship.

**Keywords:** Social Economy, Social Enterprise, Cooperative Platform, Blockchain, Social Innovation, Sustainable Development, Digitalisation

**JEL Codes:** L31, O33, O35

## 1. Digital Platforms: Online Marketplaces for Almost Everything

Digital platforms are among the most impactful technological innovations in the new millennium. As intermediary social and business arrangements, they connect internet users (often in different roles, such as producers and consumers) and enable the exchange of value and information between them. The general character of this function has prompted the emergence of digital platforms in all kinds of sectors and supply chain segments. Platforms may for instance let users buy and sell ‘non-digital’ services like transportation, culture and media, housing, legal advice, health consultation, or the delivery of physical goods. Meanwhile, others offer per se ‘virtual’ goods and services such as social media, software, server space, data management, and many more.

The most important features of digital platforms are the automatic creation, processing, transmission, visualization and cloud-storage of information allowing users to communicate information and exchange value with other users in real-time and without further a-do of an intermediary actor. Moreover, the enabling of direct communication and exchange further allows to connect users at almost no costs and often with exceptional friendly usability for average users.

The broad applicability of digital platforms has started to rapidly reorganize traditional forms of social and economic interaction. Therefore, while many observers keep cherishing the technological possibilities for the social good, others have pointed to the imperative need to govern these technologies and mitigate their detrimental effects. This call is also backed by observers criticising the tendency of platforms to monopolize markets and exert considerable market power vis-à-vis users and competitors<sup>4</sup>. Indeed, markets quite naturally favour large platforms as they exhibit strong network effects, i.e. that the value a user derives from a platform rises with the number of other users (in the same or a different user group)<sup>5</sup>. For instance, nobody wants to use a social network if there are no other users, and if you want to rent a room on the internet, you are likely to search on a platform where a large number of tenants are already present. In their efforts to maximize profit, tech firms can use this market power to tweak the relations with its users, the government, and other stakeholders to

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<sup>4</sup> Oxera, ‘Market Power in Digital Platforms’, 2018.

<sup>5</sup> Langley and Leyshon, ‘Platform Capitalism: The Intermediation and Capitalization of Digital Economic Circulation’, 2017.

their own benefit, without having to fear that users (buyers, sellers, etc.) switch to a competing platform<sup>6</sup>.

This power relation between the user and the platform is reinforced by a limited preparedness and willingness of regulators to apply and extend existing citizen and worker rights to the digital realm. Whereas social security, minimum wages, and working conditions in non-digital areas are subject to long-standing regulatory arrangements, these institutions must often first be translated and expanded to fit the struggles in the digital realm. Yet tech firms who benefit from the unregulated state have strong incentives to present the services offered digitally as activities *sui generis* (like Uber not considering itself a transportation firm). Such unresolved struggles are among the reasons for states to lag behind digital economy firms in creating regulatory frameworks ensuring that the digital transformation results in benefitting society at large by putting users at the centre of it.

## **2. Blockchain: From Information to Value**

A more recent innovation in digital technology is associated to the long-sought successful implementation of distributed ledger technology in the form of a blockchain. Blockchain-based platforms allow to decentralize the automated steps of data creation, processing, transmitting and storage. However, if this technology is to be more widely used, the enormous consumption of energy needed to process and check data transmission between the nodes should not be forgotten, especially in relation to climate change and sustainable development.

So far, digital transactions relied on at least one trusted third party to authenticate that a transaction has taken place once and only once – even when automatized on digital platforms. Consider the following example: If you buy a pair of shoes on the internet, you most likely pay using a credit card issued by a bank (the trusted party) which will record and subtract the price of the shoes from your account, sending it to the shoe store, and so make sure that the same money cannot be withdrawn or spent later. Now imagine that instead of a bank, an unknown number of internet users observe the transaction, take a note of it and put a copy of that note on the internet, accessible for everybody, but

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<sup>6</sup> Kostakis and Bauwens, 'Network Society and Future Scenarios for a Collaborative Economy', 2014; Kenney and Zysman, 'Choosing a Future in the Platform Economy: The Implications and Consequences of Digital Platforms', 2015.



unchangeable for anybody. Blockchain technology can decentralize or distribute the fulfilment of this function among connected users (so-called nodes), and immutably store every transaction where it remains forever visible for everybody<sup>7</sup>. Thereby, blockchain technology allows to solve the famous double spending problem by circumventing the necessity to rely on one central actor (such as a financial institution) to correctly record and verify the transaction<sup>8</sup>. What has been created is nothing less than an irreversible digital proof of some digital or real-world transaction it stands for. As unspectacular this may seem, it opened a whole new world of digital services to be offered, by some called the “internet of value”, in addition to the “internet of information”<sup>9</sup>.

The distributed, protocol-based nature of blockchain is the key to its potential. Not only would such innovations introduce the possibility to program digital currencies, but to represent any kind of (unique) value, from money over real-world goods to democratic votes. A recent study by the World Economic Forum (WEF) for instance suggests that Blockchain technology has the potential to store more than 10% of the globe’s total gross domestic product (GDP) by the year 2027<sup>10</sup>. And beyond economics, it has been claimed to revolutionize social and public institutions, organisations, and governance<sup>11</sup>. In the last decade, the technology has already expanded way beyond finance and is now being applied by public and private organizations in a large variety of sectors (see figure below).

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<sup>7</sup> This is true for *permissionless* blockchains; *permissioned* blockchains use the same technology within a restricted set of nodes.

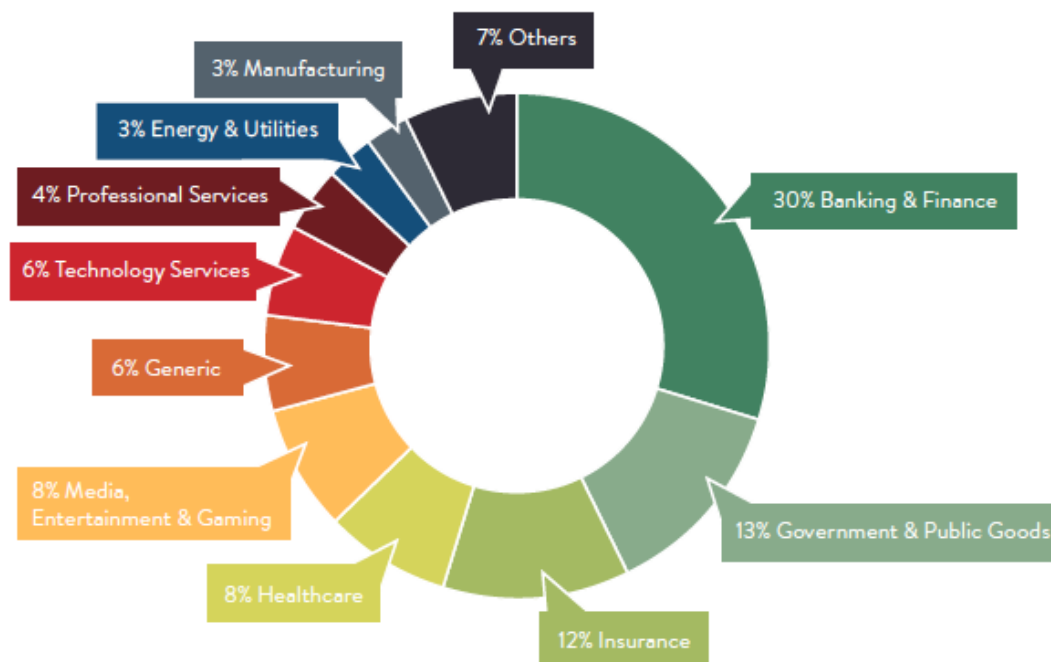
<sup>8</sup> Nakamoto, ‘Bitcoin: A Peer-to-Peer Electronic Cash System’, 2008.

<sup>9</sup> Swan, ‘Blockchain: Blueprint for a New Economy’, 2015.

<sup>10</sup> World Economic Forum (WEF), ‘Deep Shift: Technology Tipping Points and Societal Impact’, 2015.

<sup>11</sup> Pazaitis, De Filippi, and Kostakis, ‘Blockchain and Value Systems in the Sharing Economy: The Illustrative Case of Backfeed’, 2017.

**Figure: Distribution of 132 DLT (distributed ledger technology) use cases.**  
**Source: Hileman und Rauchs (2017, p. 37).**



### 3. People-Centred Business for a Human-Centred Transformation

Social economy enterprises (SEEs) are businesses and organizations that prioritize members interests and social purposes over investor-oriented growth and profit. In the definition of the European Commission, the ‘social economy’ includes cooperatives, mutual societies, non-profit associations, foundations and social enterprises<sup>12</sup>. Similar concepts have emerged on the global stage since around the 1990s, most prominently in the social and solidarity economy movement. Today, the UN Inter-Agency Task-Force for Social and Solidarity Economy ([UNTFSE](#)) brings these movements together. Largely based on the more open European definition, we use the term social economy to describe member-, solidarity- or community-based organisations, as well as social enterprises whose primary objective is to have a social, societal or environmental impact. Social goals can so be understood as ‘defined by the community of users’, or as the active promotion of a ‘social purpose’.

<sup>12</sup> European Commission, ‘Social Economy in the EU’, 2016.

SEEs represent more than 10% of all businesses in the European Union and count with 160 million members. They provide more than 11 million paid jobs (about 6% of the working population of the new EU-27)<sup>13</sup>. Recent trends show that social enterprises are present in almost every sector of the economy, serving the interests and needs of their communities and society<sup>14</sup>. This trend is not unexpected: SEEs have proven to be versatile organisations, which address areas of unmet or inadequately met social needs and create new social opportunities where other actors have failed to act. They often contribute to smart and sustainable growth by taking their impact on the environment and social cohesion into account for their long-term vision. They are part of a local territory, know and take care of community needs, and play an important role in mitigating the impacts of social and technological change. The social economy can also offer a response to many limits of the dominant economic model. Often formed by socially disempowered people, they often place women, minorities and other vulnerable groups at the heart of their entrepreneurial concerns, carry out activities that are useful to society at large and encourage the sharing of power and wealth.

In recent years, social economy enterprises have also started to shape the digital sphere. Though numbers are scarce, we observe a growing number of social economy applications of digital technology, and emerging ecosystems of businesses and organizations building a digital social economy. In analogy to the traditional social economy, digital social economy enterprises are either user-centred (owned and/or controlled by “member-users”) or use digital technology to pursue a social goal. Digital social economy innovations enable users to manage the impacts and leverage the potential of digital innovations for a people-centred transformation and to benefit society at large.

Indeed, both the user valuation model of platforms and the decentralized structure of blockchains have been claimed to be well aligned with the principles of social economy, and particularly cooperatives<sup>15</sup>. This idea is based on the observation that both technologies – like cooperatives – can disrupt the powerful position of intermediary actors on the internet. Just as agricultural cooperatives help farmers to gain market power by circumventing middlemen, social economy platforms and enterprises can help users to gain control over

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<sup>13</sup> European Commission.

<sup>14</sup> Monzón and Chaves, ‘Recent Evolutions of the Social Economy in the European Union’, 2017; Alfonso Sánchez, ‘Economía colaborativa: un nuevo mercado para la economía social’, 2017; Shannon, ‘Are Old School Cooperatives the Answer to the Blockchain Governance Problem?’, 2018’

<sup>15</sup> Corrons Giménez and Gil Ibáñez, ‘¿Es la tecnología blockchain compatible con la Economía Social y Solidaria? Hacia un nuevo paradigma’, 2019.

their digital activities, raise their income or lower prices, and to use the technologies for social goals. While capitalist digital platforms allow users to connect, social economy platforms also give users control over these connections, and empower them to govern commissions, conditions, and data in their own interest.

With blockchain technology, the array of social problems that can be tackled by digital social economy enterprises was significantly expanded to allow the use of exchange and storage of value in addition to information. A recent study on Blockchain for Social Impact analysed 193 initiatives who are using blockchain technology to drive social impact<sup>16</sup>. Of the blockchain initiatives researched in this study, 20% provide a solution to a problem that could otherwise not have been solved without blockchain and 86% bring forward material improvements to existing solutions. The study further suggests that blockchain can provide incremental (65% of initiatives) as well as transformative solutions (25% of initiatives) to some of our world's biggest challenges.

#### **4. Social Economy Applications of Platforms and Blockchain**

The upcoming pages analyse and describe the potential of social economy enterprises to manage and leverage digital technologies in the four areas work and income, money and finance, goods and services, and state and governance. The analysis features a series of real-life examples and short case studies of digital social economy enterprises.

##### **4.1. Work and Income**

Digitally intermediated work appears in many forms and sectors, from taxi and delivery drivers over content creators and artists earning money on blogs, to more traditional jobs such as software developing, health counselling, legal advice. But the internet also creates many non-work forms of income generation which could become more important in the future. Income can be sourced from renting out housing, physical goods (like equipment), or control over remote resources (like server capacity). In the advent of self-driving cars and the 'internet of things', the range of monetizable goods is poised to expand even more. Sometimes the line between different income sources can even become

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<sup>16</sup> Galen et al., 'Blockchain for Social Impact: Moving Beyond the Hype', n.d.

blurry, e.g. when using your own equipment is required to work as an Uber driver.

Further, many observers of the ‘digital transformation’ have come to interesting conclusions about the monetization of our data (including “micro-content” such as posts, stories, comments, and even ‘likes’) in combination with the attention we pay to digital platforms. Such “remunerated Facebook visits” may seem illusory, but does it, on the other hand, make sense that Facebook makes a fortune every day by simply selling this ‘data-informed attention’ to well-paying advertisement clients, while users don’t see a penny? And what about the daily data bits that you leave on Google Maps, Tripadvisor, etc. which these use to improve their search engines and targeting algorithms? These examples reveal that the boundary where data production becomes work cannot always be drawn clearly: what if someone produces a book from all your tweets, would you hope to get a slice of the royalties? In this section, we therefore consider different kinds of digital income sources for which SEEs can use digital technology to benefit users and society at large.

#### ***4.1.1. Worker Platform Cooperatives***

The main dilemma about digital work faced by workers and regulators lies in the desire to benefit from the new technologies (such as new income sources, flexibility, remote work, and a more efficient labour market), while fending off the perils of short-term and non-standard work contracts. How can the social economy help to resolve this? The digital SEEs holding the largest promises in this regard are platform cooperatives. A concept promoted by Trebor Scholz<sup>17</sup>, platform cooperatives are the result of a translation of the traditional worker cooperative model to digital work marketplaces: their users own and control the platform democratically. In digital work cooperatives, workers set up or take over a platform to offer the services on own terms.

The simple difference between Uber, Spotify, and Upwork is that the app you are using to call your taxi, listen to music, or contract a web designer is owned by the people actually creating the service. Different from shareholder-oriented businesses, in platform cooperatives workers define together how much of their

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<sup>17</sup> Scholz, ‘Uberworked and Underpaid: How Workers Are Disrupting the Digital Economy, 2017’. An earlier insinuation about “blending the institutional and financial know-how of co-operatives with the explosive power of digital technologies and open networks” goes back to Conaty and Bollier, ‘Toward an Open Cooperativism: A New Social Economy Based on Open Platforms, Co-Operative Models and the Commons.’, 2014.

business income they keep for themselves, and which percentage the cooperative should retain for ongoing costs and reinvestments. Workers also decide democratically whether they want to be covered by social security schemes, how they (do not) want to use their own and customer data, or whether they shall be allowed to transport their data to a different platform<sup>18</sup>. Compared to shareholder-owned platforms, members of a platform cooperative thereby become employees and entrepreneurs at the same time. Therefore, while e.g. Uber drivers are urged to become “independent contractors”, members of platform coops are acknowledged as equal business partners and can decide whatever legal contract suits them best.

Real examples of worker platform cooperatives have emerged mostly in North America and Europe. A prominent and well-studied example is [Loconomics](#) in San Francisco, California. The cooperative is an on-demand web and mobile app whose owners are local service professionals who use the platform as a marketplace to offer a variety of services. One of its main tenets is to counteract power concentration at the executive level by granting owners equal participation in governance. The cooperative structure allows owners not only to influence decision-making, but also to integrate “wisdom, needs, and ideas of a broad spectrum of its co-operators”<sup>19</sup>. A recent case study of Loconomics compared its ability to satisfy workers’ needs compared to capitalist platforms. They found that although Loconomics is so far unable to increase wages compared to a similar capitalist platform (TaskRabbit), they perform better in almost all other categories, including fairness of gains distribution, support for interpersonal relationship, and overall work satisfaction<sup>20</sup>.

[Doc Servizi](#) is a similar service platform founded in Italy already in 1991. It describes itself as a “network of professionals connected through a platform cooperative who emphasize human contribution, the foundation of art, and culture”. Today, Doc Servizi manages contracts, invoicing, payment of tax and social security contribution using in-house created blockchain technology. They further supervise safety at the workplace and aim to improve working conditions for its members regarding both remuneration and work environment. The

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<sup>18</sup> For a discussion of worker-centred platform design, see Choudary, ‘The Architecture of Digital Labour Platforms: Policy Recommendations on Platform Design for Worker Well-Being’, 2018.

<sup>19</sup> Scholz and Schneider, ‘Ours to Hack and to Own: The Rise of Platform Cooperativism, A New Vision for the Future of Work and a Fairer Internet’, 2017.

<sup>20</sup> Saner, Yiu, and Nguyen, ‘Platform Cooperatives: The Social and Solidarity Economy and the Future of Work’, 2019.

platform cooperative already counts more than 8000 members organised in 33 branches, but so far exists only in Italy.

Platform coop models have also applied to the creative industries, such as [Stocksy United](#) who markets royalty-free photo and video content created by its professional and amateur owners, or the cooperative music streaming platform [Resonate](#). Resonate is built by and for musicians in order to develop a fair environment in which independent artists can build sustainable careers on their own terms. One of the key ideas behind Resonate is that all musicians should have the opportunity to own and control their streaming service. Blockchain technology enables full transparency and accountability to content creators. Unlike other streaming services that do not pay per-stream rates, Resonate offers a unique model allowing artists to get directly compensated for every play. Resonate decided to incorporate as a co-operative to allow everyone involved (fans, musicians, independent labels and workers) to be a co-owner and to share in decisions. Therefore, all members can vote on features and projects to develop, elect advisory board members and upper management, decide on key policies that affect how user data is used, and what kinds of partnerships to make.

Platform coops have also emerged through collaboration between worker unions in non-digital sectors. [SEIU-UHW](#)<sup>21</sup>, a union of licensed vocational nurses in California is a case in point. Seeking to improve working conditions of members, SEIU-UHW started to collaborate with a tech start-up to create a platform where nurses can be dispatched on demand to patients' homes. Ra Cristiello, co-founder of the platform notes that "[b]y monopolizing the labour supply in a particular narrow market, organized labor can use the union worker cooperative model to enable workers to own their own labor and enjoy portable benefits, thanks to a collective bargaining agreement between the cooperative and the union"<sup>22</sup>. In other sectors like the taxi industry, existing drivers' cooperatives have also adopted mobile hailing applications<sup>23</sup>. Thanks to this, taxi drivers can emulate the advantages of "the Uber model" while maintaining control over working conditions.

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<sup>21</sup> Service Employees International Union-United Healthcare Workers West (SEIU-UHW)

<sup>22</sup> Criscitiello, 'There Is Platform Power in a Union', 2016, 146.

<sup>23</sup> Some taxi cooperatives have developed their own applications, but many also use licensed software such as [taxi.eu](#).

#### 4.1.2. Beyond Work

By organizing non-work income sources in platform cooperatives, users can rent out space and goods to other people without a third-party shareholder cashing in every transaction. This allows owners of resources or data to gain a (higher) income, or to demand a lower price from the customer. Platform coops also facilitate sharing and governance of a resource in a network of virtual or nonvirtual friends. Think for instance about co-owning a car, a server, a house, or the solar-panels on a community church's rooftop that generate income for the whole network and are governed democratically<sup>24</sup>. Such platforms can theoretically comprise thousands of members owning hundreds of resources. Whoever uses them pays, and who does not, benefits equitably. Particularly with the advent of blockchain technology such decentralized owner networks have become much more stable and powerful. The openly accessible distributed ledger allows to track exactly who has used what, when, and how long. In some close future, blockchain-enabled smart contracts could even process transactions between users autonomously, just like a self-driving car that pays for its own fuel before picking up the next customer<sup>25</sup>.

An interesting example of non-work digital income sources is the Slovenia-based energy trade platform [SunContract](#). SunContract is a blockchain-enabled platform that is pioneering the decentralisation of the energy sector, tailoring it to maximise benefits of small-scale energy producers (and consumers) rather than corporate utilities. The platform directly connects electricity producers and consumers in a pool of users whereby all transactions are saved on the blockchain and remain reviewable. Any producer on the SunContract trading platform can become a trader and offer its surplus electricity on the platform to others, while smart contracts allow their automatic remuneration when the provided energy gets consumed. This model also carries substantial advantages for energy customers, such as a broader selection of energy sources, and, so expect the project founders, a significant price advantage compared to conventional energy suppliers.

A similar business model is offered by the [Filecoin Network](#), but for hard drive storage. The idea is simple: put your unused hard-drive storage to work and get paid for hosting files on the global Filecoin platform. By saving users' data in encrypted form on spare hard drive space of other users, the platform can provide cloud storage services without operating massive server parks. When a

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<sup>24</sup> Read for instance Kounelis et al., A proof of concept about 'Blockchain in Energy Communities', 2017.

<sup>25</sup> Boucher et al., *How Blockchain Technology Could Change Our Lives: In-Depth Analysis*, 2017.



customer stores more data on the cloud, some Filecoins (the underlying currency) will be subtracted from their balance and sent to the provider of storage capacity. Hosts can exchange the digital coins for any currency or keep them to buy storage for their own data.

For remuneration from data production, users can organize their data rights in a platform coop serving as broker and union between the user and the platform monetizing the data. In the European Union, the General Data Protection Regulation (GDPR) grants internet users a substantial set of rights vis-à-vis commercial platforms, including the right to download your data and to transport it to a third party<sup>26</sup>. In this context, digital SEEs can step in as intermediators to ensure appropriate data protection and remunerate users for their data production by aggregating and selling anonymized data sets to interested customers (e.g. in advertisement). Such collective action could bear promising perspectives in many areas where individual and aggregate data are of value, ranging from the routes we choose (traffic data to program self-driving cars and taxis), over product and location reviews to health and consumer data. Social economy enterprises are currently emerging to take on this new role as data intermediators under the GDPR. [Weople](#) is an online service that allows you to manage and visualize your personal data, but most importantly to sell it anonymized to advertisers and other customers of such data. The “data bank”, as it calls itself, promises to pay back up to 90% of the generated value to the customer, yet so far grants data producers no decision-making power or other governance functions<sup>27</sup>. The social economy clearly exhibits potential to take these functions a step further, promoting a comprehensive approach to data rights and valuation in the future.

## 4.2. Money and Finance

Important roots of the modern social economy lie in centuries-old rotational savings and credit schemes (ROSCAs), as well as in the European 19th century movement of rural savings and credit cooperatives (SACCOs). Alternative currencies based on equitable goals can also be traced back to the early social economy, such as Robert Owen’s National Equitable Labour Exchange of 1832<sup>28</sup>. Since then, the use of social currency and finance schemes has developed into a

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<sup>26</sup> Art. 20. GDPR. <https://gdpr-info.eu/art-20-gdpr/>.

<sup>27</sup> See [this video](#) about Weople and how it works (in Italian).

<sup>28</sup> Harrison, ‘Quest For the New Moral World: Robert Owen & the Owenites in Britain & America’, 1969.

broad array of initiatives to promote local economic development on socially sustainable terms around the world. With the advent of digital platforms, and particularly, blockchain technology, social currency and finance initiatives can thrive on a whole new technological basis, allowing for a myriad of advantages over non-digital money and finance.

Some of these innovations also bear risks and trade-offs that must be managed in order to reap their full benefit. An important characteristic of digital encryption and therefore, blockchains, are that the identity of buyers and sellers are usually concealed (although also users of encrypted pseudonyms could be uncovered under certain circumstances<sup>29</sup>). While this brings important advantages for privacy, cryptocurrencies are still primarily used to buy drugs, weapons, and other illegal goods<sup>30</sup>. SEEs that use digital technology must be aware of these risks and aim to minimize abuses but still ensure privacy for their users. These concerns are even more important for financial platforms that deal with people's banking and consumer data. SEEs using platforms and blockchain must therefore work to protect users' data from access by criminals and other interested parties.

#### **4.2.1. Blockchain-Enabled Finance for Social Goals**

After the publication of Satoshi Nakamoto's white paper that introduced blockchain technology in 2008<sup>31</sup>, it took several years until its potential would become recognized beyond the hacking community. And even by that time, most estimated its potential use solely in cryptocurrencies. Although by now many more possible implementations are known, its most important potential still lies in enabling digital payment without intermediation. Indeed, the abovementioned circumvention of a financial institution renders the payment process faster, cheaper, more secure, more flexible and inclusive, more transparent but private, and even enables governance by the community of users instead of a central, self-interested actor. Leveraging these advantages, social innovators have built a range of applications to benefit users and create social impact.

Among the most promising of such applications is the facilitation of international money transfers, intensely used by migrants to send remittances to their families

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<sup>29</sup> Boucher et al., *How Blockchain Technology Could Change Our Lives*, 2017.

<sup>30</sup> Bloomberg, 'The Eight Most Popular Cryptocurrency Transaction Types Are Not What You Expect', 2019.

<sup>31</sup> Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System', 2008.

and communities. Cryptocurrencies allow for much faster, cheaper and safer transfers than financial institutions. Social economy platforms aim to maximize users' utility in such money transfers by applying equitable transaction fees and simple interfaces.

Further potential lies in the financial inclusion of people who lack the money, documents, or simply live too far away from a financial institution to have access to savings and credit services<sup>32</sup>. With digital money, SEEs can more easily offer financial services to these people, leveraging the user community for innovations of traditional instruments like digital ROSCAs and other credit schemes. Related improvements are possible in the insurance market, e.g. for agricultural producers. Smart contracts automatically transfer information or money to a pre-defined account once a defined quantity has been delivered, a certain level of rainfall has (not) been met, or a required sugar content was measured. The use of blockchain can so lower room for discretionary power abuse, particularly where insurance markets are deficient or altogether absent.

Digital platforms can also be used to organize community saving and investment to promote social goals such as affordable housing, and to invest in social enterprises. For instance, [The Working World](#) in New York City pools local investment funds to increase their market leverage. Thereby, each of these funds can command better investment terms while remaining community-controlled; to assure communities remain in the position of power, decisions are made democratically, and the governance structure is designed to minimize central control<sup>33</sup>.

#### **4.2.2. Digital Social Currencies**

While money transfers mostly occur in the most commonly traded cryptocurrencies, regularly there are new cryptocurrency launches (initial coin offerings) with varying purposes, user groups, and technological underpinnings<sup>34</sup>. Among them are various social economy initiatives that

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<sup>32</sup> Scott, 'How Can Cryptocurrency and Blockchain Technology Play a Role in Building Social and Solidarity Finance?', 2016.

<sup>33</sup> Scholz and Schneider, 'Ours to Hack and to Own: The Rise of Platform Cooperativism, A New Vision for the Future of Work and a Fairer Internet', 2017, 173.

<sup>34</sup> In January 2020, the cryptocurrency database [cryptoslate.com](https://cryptoslate.com) featured 2369 different coins, though two thirds of their total value (USD 260 billion) was held in Bitcoin.

developed their own cryptocurrencies to pursue social goals around sustainability, solidarity finance, and the upholding of community values.

Some of these focus on facilitating donations for projects or people in need. Such “charity coins” have already been used successfully in development work to quickly, cheaply and transparently (limited risk of fraud) give out food tokens to beneficiaries of the World Food Program<sup>35</sup>. Another prominent example is [AntLove](#), a blockchain-enabled donation system launched by the Chinese e-commerce conglomerate Alibaba. AntLove allows Alibaba users to digitally donate to a variety of NGOs and charities, track their transactions and understand how their funds are used.

Blockchains and digital platforms can also be used to support community currencies aiming to promote local, sustainable and intra-social economy trade<sup>36</sup>. An important innovation compared to nondigital community currencies lies in the possibility of facilitated or automatic micropayments<sup>37</sup>. Social economy enterprises often depend on some sort of member contribution or transaction tax which allows them to pay running costs while making their service accessible to disadvantaged people. The easier payments to the social economy platform become, the more people will feel encouraged to pay tiny amounts every time they use a service, the less they will have to pay for the enterprise to keep the service running. Automatic payments could also be utilized to enable precise “pay what you use” models, e.g. on journalistic, music or video platforms. Every time you read an article, listen to a song or watch a video, a tiny amount would be deducted from your crypto wallet and sent to the creator of the content (and perhaps an even tinier one to the content platform). These innovations are particularly useful for the social economy whose value statement or governance configuration may not allow for other income sources, such as advertisement or aggressive pricing.

Digital social currencies have also emerged in response to criticism about current cryptocurrency solutions. For instance, common critique of the proof-of-work block validation system, employed e.g. in Bitcoin and Ethereum, centres around its tremendous energy consumption, as well as its remuneration system for favouring large, commercial “miners” instead of average users<sup>38</sup>. And as

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<sup>35</sup> World Food Program (WFP), ‘Blockchain Against Hunger: Harnessing Technology In Support Of Syrian Refugees | World Food Programme’, 2017.

<sup>36</sup> Rossiaud and Calderon, ‘Local Citizen Currency as a Neighborhood Economic Contract’, 2019.

<sup>37</sup> De Filippi, ‘What Blockchain Means for the Sharing Economy’, 2017.

<sup>38</sup> Corrons Giménez and Gil Ibáñez, ‘¿Es la tecnología blockchain compatible con la Economía Social y Solidaria? Hacia un nuevo paradigma’, 2019.

mentioned above, the concealed identity poses severe regulatory questions with regard to the purchase of illegal goods and services. Responding to such critique, most digital social currencies have chosen to deploy a different validation mechanism, such as (distributed) proof-of-stake or proof-of-cooperation which largely avoid both environmental and inequality concerns.

A recent example is the community currency [Léman](#) in the Geneva-region at the Swiss-French border. The Léman is a complementary currency tied to the Swiss Franc that can be traded against goods and services in participating shops in Geneva and surroundings. On top of the physical Léman bills, the system has a digital counterpart allowing to send, receive, and even lend out money to other users' coin wallets. To avoid speculation of the Léman, its mining is not remunerated and therefore consumes only little energy<sup>39</sup>. Based on the [Com'Chain](#) blockchain it remains open for collaboration with other currencies to expand the network.

### **4.3. Goods and Services**

Since the first modern cooperative in Rochdale (UK), an important part of the social economy has centred around lowering prices and improving the quality of consumer goods and services. The digital technologies available today equip social innovators with important tools to take these goals to the next level.

#### ***4.3.1. Buy, Share, Repair and Manage***

The potential of the digital social economy in promoting better consumption practices has long been proved on regular digital platforms: sharing, barter, repair and recycle networks flourish in the internet age and, with the advent of digital payments, are expected to grow even more in scale and scope in the upcoming years. Buying and selling used stuff has never been so easy as on digital platforms, and so has renting an unused bedroom or sharing a car. But also so-called sharing platforms can have problematic impacts, which is why the management of digital innovations is once more just as important as their utilization<sup>40</sup>. Social economy actors anticipate such issues with their member-

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<sup>39</sup> Rossiaud, 'E-leman: une monnaie blockchain locale en Suisse et ailleurs', 2018.

<sup>40</sup> Schor and Attwood-Charles, 'The "Sharing" Economy: Labor, Inequality, and Social Connection on for-Profit Platforms', 2017.

based or purpose-oriented governance, and can so leverage the new technologies to create both social and economic value<sup>41</sup>.

Short-term holidays are a case in point. The popularity of the home rental platform Airbnb affects and sometimes deeply transforms popular areas of tourist hubs like Venice, Amsterdam, Barcelona, Berlin or Tokyo. Commercial actors who buy property in central residential area for renting them out on such platforms often led to exploding housing prices, the proliferation of short-term contracts, and the eviction of poorer residents<sup>42</sup>. Airbnb's social economy pendant [Fairbnb.coop](https://fairbnb.coop), a cooperative, donates 7.5% of each booking (equivalent to half of its proceeds) to local projects suggested and decided by local residents and travellers. It also protects users' data while sharing relevant information with local governments, making sure its users comply with local regulations.

A similar example exists in the film industry, where a platform called [Member's Media](https://membersmedia.com) engages filmmakers, collaborators and their audiences to become majority owners of a multi-stakeholder cooperative. The purpose of the Oregon-based platform is to "increase the quality, quantity, and value of independent narrative media, and give the audience a true voice in the creation of content"<sup>43</sup>. Like this, Member's Media connects a large base of supporting audience with independent filmmakers, helping the latter to circumvent the highly extractive commercial solutions normally chosen by content creators, and to respond more directly to audience's desires.

Though the sheer size of Amazon or Alibaba makes it extremely difficult for social economy alternatives to enter the general e-commerce market, some are slowly but surely gaining track. [Fairmondo](https://fairmondo.com), incorporated as a cooperative with about

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<sup>41</sup> Roh, 'The Sharing Economy: Business Cases of Social Enterprises Using Collaborative Networks', 2016.

<sup>42</sup> Guttentag, 'What Airbnb Really Does to a Neighbourhood', 2018. Also read about the dramatic case of Venice's population decline in Albanese, Salzano, and Vespignani, 'The Long, Slow Death of Venice', 2019.

See also reactions from local authorities

([https://www.cidob.org/en/publications/publication\\_series/notes\\_internacionales/n1\\_222/cities\\_versus\\_short\\_term\\_rental\\_platforms\\_the\\_european\\_union\\_battle](https://www.cidob.org/en/publications/publication_series/notes_internacionales/n1_222/cities_versus_short_term_rental_platforms_the_european_union_battle)),

as well as a recent large-scale university study made for the city of Vienna, with notably a detailed geographical mapping showing the consequences per urban district: <https://wherebnb.in/wien/> (Seidl, R.J., Plank, L., Kadi, J. (2017) Airbnb in Wien: eine Analyse, interaktiver Forschungsbericht (Stand: 19.10.2017), Wien)

& the political solutions put in place:

[https://emedien.arbeiterkammer.at/viewer/ppnresolver?id=AC13073662\\_2018\\_04](https://emedien.arbeiterkammer.at/viewer/ppnresolver?id=AC13073662_2018_04)

<sup>43</sup> Scholz and Schneider, 'Ours to Hack and to Own: The Rise of Platform Cooperativism, A New Vision for the Future of Work and a Fairer Internet', 2017, 83.

2000 members in Germany, is combining sustainably produced and second-hand products in one digital marketplace. Their main focus still lies on books, their platform is fully functional and could technically accommodate a virtually unlimited variety of products.

Yet another variety of social economy platforms aims to facilitate ‘time exchange’, where the time of every contributor is valued equally regardless of the type of work that is being traded. As a result, such time swaps bear a strongly equitable dimension. Digital platforms can powerfully facilitate such models, and various social economy enterprises have embarked on it. One such example is the [Swap Your Time](#), a website- and app-based platform allowing to exchange time with other people for free. Typical services include babysitting, walking a dog or mowing a lawn, but technically there are almost no limits to services to be offered in exchange for other people’s time.

#### ***4.3.2. Tracking and Certification***

Beyond enabling value-exchange platforms, blockchain technology can help solving another big problem for sustainable consumption. In times of globally fragmented supply chains, tracing a good along a series of production sites and back to the origin has become a serious obstacle for quality, origin, and sustainability certification. Tracking supply chain information on blockchains can help overcome these obstacles, and a number of social innovations have emerged for a variety of purposes and sectors, including food, commodities, and health. The procedure is similar for all of them: producers and automated sensors record information on a product at various points along the supply chain until the product reaches the consumer. Like this, buyers can see when and by whom the product was first mentioned in a transaction on the blockchain, which stations it passed along the way, and other information such as the temperature of the product throughout the journey. As a result, buyers can better rely on the authenticity of the product. Also agricultural producers have an interest in making their products traceable, preventing fraud and counterfeiting which could harm producers and consumers alike. This technology can also be applied in the field of waste reduction, the recovery of secondary materials, and the collection and differentiated treatment of waste.

Transparency along supply chains can also strengthen the bargaining position of customers and suppliers, e.g. when price reductions are not passed on. Similarly, blockchain technology could enhance trust between an agricultural cooperative



and its members by rendering transactions more predictable and transparent<sup>44</sup>. This transparency of transactions further encourages more active and empowered involvement of various stakeholders such as environmental associations and community organizations<sup>45</sup>.

A promising application of blockchain technology to supply chain tracking is [OriginTrail](#), established in 2018. OriginTrail's business model is based on the observation that we generally have very little information about how our consumer goods made their way to our homes because of the limited ability to share data along the supply chain. The Slovenian social economy start-up aims to enable such universal data exchange for product trade, and to ensure integrity through immutability of the data once saved on the blockchain. To promote the adoption and use of its technology by ever more firms, OriginTrail's blockchain was designed to work with any other software (interoperability).

A project leveraging the tracking ability of blockchains in the health sector is the Nigerian start-up [RxAll](#). Its goal is to prevent the spread of counterfeit drugs by combining a digital platform, mobile apps, and an instant scanner which is able to distinguish genuine from fake medication within 20 seconds. Proving the urgency of the issue, the start-up soon achieved considerable success. In the five years since its creation, RxAll has already expanded to 13 countries, with a main focus on Africa where drug counterfeiting is a particularly widespread problem<sup>46</sup>.

#### **4.4. State and Governance**

Digital platforms, particularly when blockchain-enabled, can vastly improve a variety of interactions between governments and citizens, but its potential to govern human relations can be applied way beyond public bodies. In this area, the social economy can facilitate the people-centred establishment, use and management of digital identities to be used for government services and e-voting. It can also support and replace government functions with digital technology where this is desirable. Finally, SEEs can also leverage platforms and blockchains to facilitate their own management and governance, but also help other businesses adopt more participative and transparent decision-making.

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<sup>44</sup> Ge et al., 'Blockchain for Agriculture and Food', 2017.

<sup>45</sup> Guerini, 'Blockchain and distributed ledger technology as an ideal infrastructure for Social Economy (Own-initiative opinion)', 2018.

<sup>46</sup> Jacquemot, 'En Afrique, des médicaments qui tuent', 2020.



#### **4.4.1. Digital Identity and E-Government**

Governments around the world have launched initiatives to create ‘digital identities’ to enable e-voting and digital access to government services. While many governments have already developed digital interfaces for some of their services, a growing number has also started to experiment with blockchain to allow for applications that require even more secure data management, such as e-voting. Digital IDs also enable a whole new range of services which so far required a physical proof of a document, such as birth certificates, school diplomas, land ownership rights, and so on. Blockchain technology can replace this need for a physical proof as it immutably saves information on the distributed ledger. This could particularly benefit people who lack physical proof of their identity, land ownership, parenthood, education, or else, as is often case with stateless people and refugees.

Despite the large potential of these technologies to improve interactions between states and citizens, various state-led efforts to establish e-IDs have raised eyebrows among people and experts<sup>47</sup>. This may be founded in fears about government surveillance and doubts about the public sector’s ability to establish user-friendly solutions. Meanwhile, as recent initiatives (such as in Switzerland) have shown, citizens may be even more wary when digital identities are instead provided by the private sector, sometimes suspected of using the vast amounts of personal data for illegitimate purposes. If that is the case, such reservations could be alleviated if access to personal data and use of the digital identity become subject to strong accountability, transparency, and participative governance. The social economy combines the entrepreneurial flexibility of the private sector and the social orientation and accountability of public and community bodies. Moreover, the social economy’s usual openness for collaborations would likely favour an interoperable standard that could facilitate inter-governmental relations in topics such as migration, international elections, and else. Though so far (to the best of our knowledge) no social economy initiatives have been launched to provide e-IDs in cooperation with public bodies, the potential of such solutions is evident.

Meanwhile, a handful of social enterprises have emerged who collaborate with governments on blockchain-based e-voting and e-government or provide own ‘public’ services. Lehr and Lamb (2018) list several of these initiatives, including the [World Identity Network](#) and the [Humanized Internet](#) that allow people and

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<sup>47</sup> Mettler and Guenduez, ‘From SuisselD to SwissID: Overcoming the Key Challenges in Switzerland’s e-Credential Market’, 2019.

governments to store entire personal documents in ‘distributed digital lockboxes’. Such lockboxes can include important identifiers such as birth certificates, university degrees, or even health data. The encrypted storage on the blockchain allows users to keep their information private and secure, but also to give permission for anyone to access it anywhere in the world. Another project called [Bitland](#) provides similar services for land titles which are often subject to manipulation on the part of governments and corporations engaging in land grabbing. In this context, Bitland enables the immutable and auditable record of land titles on the blockchain.

#### **4.4.2. Governance and Decision-Making**

The transparency of blockchains is useful for governance also in non-state organisations and firms. Transparent decision-making facilitates good governance and tracking of resource flows can prevent corruption and fund abuse. The social economy, charities, NGOs, public aid agencies and private donors can use blockchain to observe whether project money indeed reaches beneficiaries, and to hold managers accountable at each level of the project chain<sup>48</sup>. Such technologies are also important for platform cooperatives who must ensure democratic processes which underlie its business activities. Other social economy applications could enable community management, including for environmental protection and management of common-pool resources<sup>49</sup>.

Various platforms enabling verifiable decision-making and e-voting have emerged in recent years, partly under generous state support. From 2013 to 2016, the European Union funded the project [D-Cent](#) which aimed to bring together citizen-led organisations promoting open-source, distributed, and privacy-aware tools for direct democracy and economic empowerment. The main result of the project is a toolbox that can be implemented by national, regional or local governments to engage citizens in policy debate and development, participatory budgeting, and political decision-making. Yet the use of the toolbox is by no means restricted to public bodies but can simply adapted to the purposes of any organization aiming to deploy the governance features included in the toolbox<sup>50</sup>.

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<sup>48</sup> Accenture, ‘Blockchain for Good: 4 Guidelines for Transforming Social Innovation Organizations’, 2017.

<sup>49</sup> Oberhauser, ‘Blockchain for Environmental Governance: Can Smart Contracts Reinforce Payments for Ecosystem Services in Namibia?’, 2019.

<sup>50</sup> Roio et al., ‘D4.4 - Design of Social Digital Currency’, 2015.

Similar tools were developed by [Loomio](#), though primarily for organizational instead of government purposes. The worker-owned platform incorporated as a cooperative in New Zealand and Rhode Island builds tools for collaborative decision-making that can be used by cooperatives, social movements, community organizations, and government initiatives around the world. The tool allows for various uses, from day to day decision-making to large project governance engaging many thousand users. Just like other discussed examples, Loomio is primarily interested in making its services accessible to a maximum number of users, and therefore prioritizes interoperability over a proprietary standard.

#### **4.5. Growing Beyond Potential: Challenges, Risks and Solutions**

All of the discussed potential of the social economy to manage and leverage digital technologies for social goals depends on one central condition: whether social economy enterprises can achieve enough growth to matter, and in many sectors, compete with profit-oriented firms. As the United Nations Economic and Social Council (ECOSOC) suggests, the key question is how to bring this technology to maturity for providing benefits at a global level and on a large scale. Building up the necessary ecosystems for engaging all stakeholders, developing necessary standards and resolving security issues are key pre-conditions for accelerating its adoption<sup>51</sup>. This scaling challenge is particularly difficult for two reasons.

The first set of difficulties arises from the social and environmental concerns accompanying digital technologies as such. As the digital social economy puts users at the centre and is at the same time concerned with the sustainability of its actions, it cannot simply disregard peoples' worries about technology. Many workers are wary of adopting digital technology appliances, given how fiercely some have fought against platform contenders in the transportation, tourism, and other industries. Indeed, joining the digital social economy may feel like a "deal with the devil"<sup>52</sup> and requires that people (re)gain trust. An important step is therefore to promote the awareness and skills of communities and users. This not only serves to show the potential benefit of digital technologies, but also

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<sup>51</sup> UNECE Executive Committee, "Briefing note on Blockchain for the United Nations Sustainable Development Goals", Pub. L. No. ECE/TRADE/C/CEFACT/2018/25 (2018), [http://www.unece.org/fileadmin/DAM/cefact/cf\\_plenary/2018\\_plenary/ECE\\_TRADE\\_C\\_CEF\\_ACT\\_2018\\_25E.pdf](http://www.unece.org/fileadmin/DAM/cefact/cf_plenary/2018_plenary/ECE_TRADE_C_CEF_ACT_2018_25E.pdf)

<sup>52</sup> Criscitiello, 'There Is Platform Power in a Union', 2016, 145.

that they can remain in the driving seat of this transformation if they choose to participate in digital social economy enterprises. Sophisticated technologies such as blockchain require skills and resources that are not available to everyone, so another key challenge of the digital social economy is to create the skills needed to use them and participate in social economy platforms. These skills include the ability to work within the digital environment, but also the ability to translate complementary skills such as creativity, high-level cognitive and interpersonal skills to the digital realm<sup>53</sup>. Thanks to their formal and informal networks and participative structure, SEEs are often trusted actors within communities, and can become local points of reference to create awareness about digital technologies, and help people prepare and protect themselves.

Moreover, to fulfil their commitment to user-centredness and sustainability, social economy enterprises must crucially avoid the social and environmental problems that other digital technology initiatives are typically criticized for. This may seem like a no-brainer given that many digital social economy businesses derive their very *raison d'être* from the correction of such flaws. But the temptation to reproduce some of the social and environmental vices typically remains high in spite of progressive purpose statements. If platforms warrant interoperability and users' right to transport their data, they make it easier for users to leave. If they refrain from collecting and interpreting every bit of data they can get from users, they might miss important learnings and even fail to innovate in time – again provoking the departure of users. Such concerns are omnipresent in both conventional and blockchain-enabled platforms, and a strict prioritization of users may pose serious limits to the enterprises' ability to grow.

Further, the environmental impacts of digital technologies are often grossly disregarded and have only raised to the surface with reports about the tremendous energy consumption of the bitcoin blockchain. On 8 February 2020, the Bitcoin blockchain alone consumed on average 75 terawatt hours of power per year, producing 35.8 million tons of CO<sub>2</sub>, roughly equivalent to the yearly emissions of New Zealand<sup>54</sup>. It is not surprising that early social economy applications of blockchain technology have aimed to reduce this energy consumption while maintaining its benefits. Nevertheless, it remains an interesting option for social economy start-ups to piggyback on large and secure existing blockchains, such as the one underpinning Bitcoin. More sustainable and equitable validation mechanisms like distributed proof-of-stake and proof-of-cooperation are more in line with social economy values, yet most of them are

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<sup>53</sup> Deloitte, 'Blockchain: Enigma. Paradox. Opportunity', 2016.

<sup>54</sup> The Bitcoin Energy Consumption Index provides daily tracking data on <https://digiconomist.net/bitcoin-energy-consumption>.

still relatively small and thus relatively vulnerable. It therefore remains to be seen how the digital social economy accommodates these trade-offs.

The second challenge is related to the abovementioned networks effects typical to platform markets and to particularities of digital technologies more broadly. As the utility of platforms increases with the number of users they accommodate, it becomes more difficult to convince users to move from a large incumbent to a SEE provider. This is true even if the contending platform outperforms the current leader in all technological and social regards. One important reason is that users typically face considerable switching costs. These occur as users must learn how to use a new technology, connect with old and new peers, and rebuild their reputation (if portability is restricted as on most profit-oriented platforms). On top of that, even if switching costs are negligible, contenders still face the so-called penguin problem<sup>55</sup>: adoption will stall as long as users are unsure whether others will adopt the new platform as well. Although a better platform might quickly develop network effects, it critically depends on initial adopters to quickly show its benefits and attract new users. Both difficulties can partly be countered by effective organizing, as happens when trade unions develop their own platform cooperatives, as in the case of [SEIU-UHW](#). Social economy platforms can also collaborate to maintain interoperability (including data portability) between them. If, for example, users can re-use their income saved in the working platform coop to buy electricity on a SEE energy trading app, their switching costs for both apps can be substantially lowered. In addition, if the platform coop even encourages users to switch its energy consumption to the social economy platform, users can assume that the platform will quickly grow which increases their utility and incentivizes them to join (overcoming the penguin problem).

Several SEEs have developed exactly to facilitate this scaling challenge for other enterprises. One of them is [HashNET](#), based in Slovenia. HashNET is a validation algorithm designed to solve the sustainability problem while increasing speed to more than 200.000 transactions per second. It was one of the first blockchains in the world to use both proof-of-stake and proof-of-authority consensus mechanisms. In doing so, HashNET remains cost-efficient and environmentally friendly given that no mining is required, as it uses minimal computing resources. Further, the algorithm enables equal inclusion and participation of the community members, as well as to protect users' digital identities, human and data rights.

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<sup>55</sup> Tiwana, 'Platform Ecosystems: Aligning Architecture, Governance, and Strategy', 2014: When penguins are unsure whether predators hunt a coastal water spot, they wait until first jumpers come back to the surface alive. Only then follows the penguin crowd.

Similar functions are currently under development of the [ARK](#) community. The ARK is creating a sandbox ecosystem where businesses and other users can create their own blockchain from a clone of ARK in just a few clicks. To make this ecosystem as widely-accessible as possible, they are focusing heavily on providing a good user experience and incorporating as many other blockchains and coding languages as possible. Developed since 2016, it has the particularity of carrying a vision of interoperability between blockchain ecosystems. Thereby, ARK becomes an intermediary between different chains allowing them to communicate with one another and trigger events across chains. A sentence summarizes this vision, supported by the ARK community and its team: "ARK has no competitors, only future partners." The ARK crew investigated many options for creating a legal entity which was the right legal framework for the ARK Ecosystem vision. Mainly located in France, they found that the SCIC<sup>56</sup> was a cooperative form of incorporation that offers the structural framework to achieve ARK's innovative goals and the character as an open source software project. The team hopes that the cooperative structure will naturally speed up development and adoption of the technology, and strengthen the value of the ARK Token.

A related example facilitating sustainable growth of the digital social economy is the French cooperative [OSMOSE Collective](#). Based on social and solidarity economy values, OSMOSE leverages the ARK technology to allow peer-to-peer payments and transparent democratic management of digital ecosystems. These can integrate authorities, organizations, firms, social networks, developers, and other users of digital technologies, including actors, agricultural circles, technological actors, large companies and SMEs, start-ups, independent developers or associations. It can therefore be applied to an unlimited variety of purposes, such as the financing and provision of space, tools, financial resources and decentralized services, ranging from housing, work spaces (co-working, agricultural land), training, shared leisure or common services (education, health, transport, culture).



Policy recommendations for scaling up the digital social economy have, to our knowledge, not been formulated before. From the analysis and cases presented in this paper we acknowledge that fitting legal frameworks may not be a major

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<sup>56</sup> SCIC (Sociétés Coopératives d'Intérêt Collectif) is the French acronym for "General Interest Co-operatives". It is a new private, common interest co-operative which allows anyone — employees, users, volunteers, public bodies, companies, associations — to act together in a legal framework to govern an entity.

hindrance to the development of digital social enterprises and coops. Indeed, digital enterprises seem to be able to develop and grow within existing organizational forms, and this is also true for the digital social economy. Yet regulators might choose to take measures aiming to promote the social digital enterprises more actively e.g. with social start-up prizes or, better, relying on existing Social Economy Federations, Networks and support organisations. A strategic support of existing networks could encourage digital business development to incorporate social goals in their strategies (e.g. by setting incentives to counteract negative consequences such as in the tourism business). Finally, governments can themselves become active in providing digital infrastructure such as digital identities (as many have started), the provision of public blockchains (such as Estonia), crowdfunding and other platforms which are conducive to user-centred and sustainable development of the digital economy. As policy experimentation and research proliferate on this subject, we will hopefully soon be able to draw further and more specific conclusions.

Finally, mastering the scaling challenge for the digital social economy crucially depends on the entrepreneurial creativity, skill and commitment that often seems so abundant for profit-oriented innovation. This may be related to a tendency of people interested in social problems to focus their time and energy on research, regulation and support of digital innovations rather than on taking action themselves. Another reason could be that culture and curricula of business schools and entrepreneurial networks are still strongly rooted in profit-oriented entrepreneurship. People interested in promoting social goals could feel less attracted to such places, or gradually adapt to the dominant paradigms. Of course, these can eventually be replaced by more sustainable ways of thinking and acting. But whether the potential discussed in this paper will ultimately materialize depends on one single parameter: how many people decide to actively engage in developing and participating in the digital social economy.



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