NEW TECHNOLOGIES AND DIGITISATION: OPPORTUNITIES AND CHALLENGES FOR THE SOCIAL ECONOMY AND SOCIAL ENTERPRISES

Elaborated by Q-PLAN International, Manchester Institute of Innovation Research, UNU-MERIT
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Q-PLAN INTERNATIONAL with

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Executive Agency for Small and Medium-sized Enterprises (EASME)
Unit A1: COSME

E-mail: EASME-COSME@ec.europa.eu

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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
DEI	Digitising European Industry
DES	District of Solidarity Economy
DESI	Digital Economy and Social Index
DigiComp	Digital Competence Framework
DIH	Digital Innovation Hub
DIY	Do-It-Yourself community
DLT/DLTs	Distributed Ledger Technologies
DSM	Digital Single Market
EC	European Commission
EESC	European Economic and Social Committee
EIF	European Investment Fund
EntreComp	Entrepreneurship Competence Framework
ESER	European Social Economy Regions
EU	European Union
GPT	General Purpose Technology
IT/ICT	Information Technologies/Information and Communication Technologies
IoT	Internet of Things
KETs	Key Enabling Technology
LETS	Local Exchange Trading System
OSS	Open Source Software
PSP	Public Social Partnership
R&D	Research and Development
R&I	Research and Innovation
SaaS	Software as a Service
SBI	Social Business Initiative
SBIR	Small Business Research and Innovation
SE	Social Economy
SEE	Social Economy Enterprise
SMEs	Small and medium sized enterprises

ABSTRACT

[*EN*] The study "*New technologies and digitisation: opportunities and challenges for the social economy and social enterprises*" sets out to explore how the rising importance of the social economy in Europe is facing the challenges of digital transformation. It focuses on whether, why, how, and to what extent the integration of digital platforms and advanced technologies (i.e. Open-Source, Artificial Intelligence, Internet of Things, Big Data, Distributed Ledger Technologies) may affect the design and delivery of new/better social and societal impact by the social economy. This study shows that digital platforms and advanced technologies' capabilities of automating and simplifying operations are opening up opportunities for the social economy in terms of increased reach and enhanced effectiveness. Digitalisation also underpins the creation of new and innovative social services and working conditions helping to tackle existing and emerging social and societal problems. Whilst these trends are set to continue in the near future, European Institutions, Member States policymakers and social entrepreneurs should commit to promote and support the digital transformation of the social economy and encourage the uptake, scale-up/scale-out and duplication of innovative digitally-enabled initiatives. Areas of intervention have been identified. Resources for Research and Innovation as well as traditional sources of revenues play an important role for the development and take-up of digital technologies for and by the social economy. Likewise, the development of entrepreneurial and digital skills of social economy actors are needed to foster the vision of the European digital social economy. Collaborations between various stakeholders in nurturing environments (social clusters, creative spaces or incubators) may effectively promote the modernisation of the social economy by strengthening and growing digital native cohorts of social economy organisations. Finally, in order to promote cross-Member State growth of the social economy, it is advisable to harmonise the legal forms and statutes regulating the various actors of the social economy. This way, digital platforms and advanced technologies may truly contribute to the establishment of the European digital social economy fit for the societal challenges of the 21st century.

EXECUTIVE SUMMARY

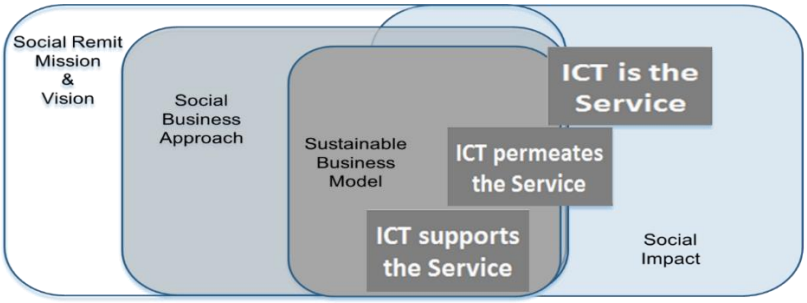
The study "*New technologies and digitisation: opportunities and challenges for the social economy and social enterprises*" set to explore whether, why, how, and to what extent the integration of digital technologies affects the design and delivery of new/better social and societal impact by social economy enterprises. To achieve this, we have identified and interviewed a number of digitally enabled social economy initiatives in four EU countries (Greece, Italy, The Netherlands and the UK). They represent the spectrum of technological, economic and social economy profiles. We undertook a focused prospective study with digitalisation and social economy experts to gauge their views on the ongoing digital transformation of the European social economy and discuss potential digital technologies trends and their implications on social economy. We also held a policy co-creation workshop to discuss how regional, national and EU levels policy can facilitate the prospective digitalisation of the social economy. The synthesis of the information and evidence collected allowed us to draw recommendations and practical guidelines on how to promote and support the digital transformation of the social economy. The focus is on encouraging the uptake, scale-up/scale-out and duplication of basic and advanced digital tools and on promoting the diffusion of innovative digitally enabled initiatives within the social economy.

Social and societal challenges may be tackled trough innovation, an essential element of social policy, and digital technologies can be the enabler of this innovative drive. Digital technologies may be adopted by social economy organisations within different operational functions and support or stimulate the social innovation process either through organisational innovation (digitalisation of organisational functions) or through the creation of new social relationships, digital products and services to serve social and societal objectives. These digital social innovation drivers underpin the digital transformation of the social economy. The digital transformation of the social economy may be fostered at different levels: i) the **internal (re)organisation** (modernisation of organisations which is typically efficiency-driven); ii) the **integration of operations** (e.g. digitisation of back office/organisational and integration of services, which is both efficiency and effectiveness driven); iii) or the overall **design of social economy initiatives** (digital social economy organisations operating with a digital business model).

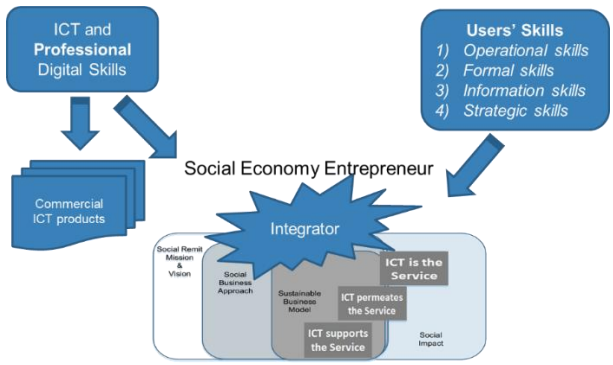
The uptake and/or integration of digital technologies does not affect only the potential for social value creation, it also introduces novel elements of governance and allows for new decentralised ownership models. These elements may have profound effects on the organisation of activities and new organisational structures are indeed emerging. Digital technologies may not (always) have a direct social impact, yet they contribute greatly to the modernisation of the social economy and a modern social economy, in turn, may prove more effective in tackling social, societal and mutual challenges. It is therefore important to understand that an entrepreneurial approach to carrying out the mission and vision of the social economy with the objective to produce social and societal impact is particularly important. This introduces an element of complexity concerned with the economic viability of social economy initiatives. In fact, introducing new technologies in established operations or designing new digitally enabled social initiatives should be consistent with the **social vision and mission** of the social economy. Setting up operations to tackle social, societal and mutual issues should be consistently managed to reflect the needs of the stakeholders in a long-term perspective. This means that operations should be economically viable and reflect **a social business approach**. In order for this to happen, the social economy should identify social and economic value creation avenues and implement them according to a viable **business model**. In other words, there should be a clear link between the social mission and vision of the social economy organisation, the type of approach to long-term sustainability, and the ways in which social and societal value is created and delivered to ensure inflow of resources for the long-term continuity of operations and, eventually, growth. These elements, in the context of the digitalisation of the social economy, are represented in the figure below.

The digitalisation process – whilst firmly rooted in the **Mission and Vision** of the social economy – enables it to pursue its mission and vision more efficiently and effectively and, to some extent, provide new solutions to social, societal and mutual challenges. The process is contextualised within the **Social Business Approach**, which consists in setting the strategy and management practices reflecting stakeholders' needs. These activities are achieved through a **Sustainable Business Model**, which ultimately ensures the creation of social and societal value through the application of digital technologies and the continuation of operations through supporting appropriate revenue streams in order to generate social impact through market relationships.

Operationalisation of digital technologies (ICTs) contribution to social economy impact



Skills requirements for the digital social economy enterprise

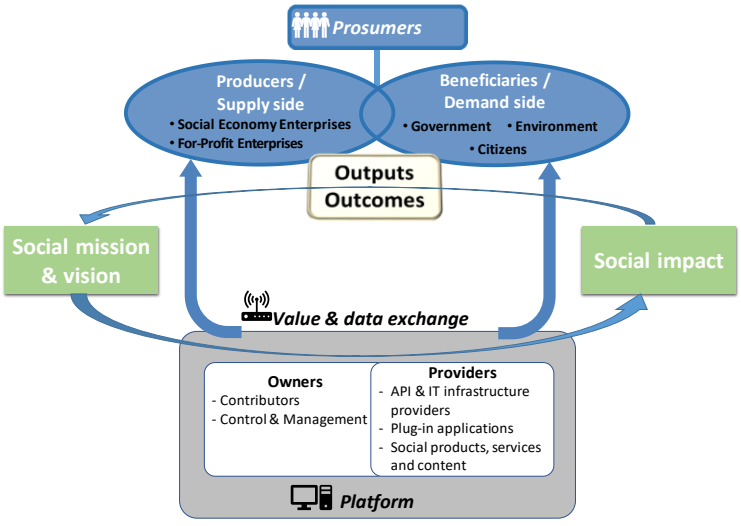


The success of the digitalisation process is highly dependent on the availability of an adequate digital infrastructure and different skill sets including **digital and entrepreneurial/social skills**. ICT and professional digital skills are necessary to design and develop the digital architecture, and to integrate technologies within the organisation's operations. These skills may be already available within the social economy or can be developed within the ecosystem. Technologies may even be outsourced, but their integration depends on the digital strategy of the social economy actors and should be tailored to the **users' skills**. The integration requires competences, which span the digital and entrepreneurial domains and are specific to the social economy. **Social economy entrepreneurs should act as integrators** across these domains.

Platform technologies and social entrepreneurial innovation

Digital platform technologies are becoming crucial for the modern social economy enterprise, as they offer unprecedented opportunities for networking and collaborating beyond physical reach. Social economy actors are making use of digital platforms (referred to in the report as ***digital social economy platforms***) to organise community engagement and foster collaborations with public and private stakeholders more effectively and efficiently than through traditional word-of-mouth or face-to-face methods. This is not only due to the shifting of operation

Digital social economy platform ecosystem



upon digital platforms; in fact, platforms may be used, adapted and shaped to reflect social economy values and missions. In chapter 3 we present a typology of digital platforms 'designs' developed and adopted by the social economy fostering the digital collaborative economy. This typology helps us navigate the great variety of platform architectures operating on the Internet. A simple distinction may be between **open and closed architecture**[1]. A closed platform, for example, may be used by a social economy organisation to reduce costs, provide efficient internal exchanges or securely operate with sensitive data in different locations or departments. On the other hand, open digital social economy platforms provide the means to connect with the stakeholders, users and beneficiaries outside the boundaries of the organisation, **activate and develop community engagement and peer-to-peer relations.** These platforms may be deployed to foster new models of **decision-making, control mechanisms and distributed ownership structures**. Across the value chain, open digital economy platforms are used for **co-creation of content, services or products**. Moreover, the technology itself may function as **intermediary between two or more parties** to facilitate exchanges and transactions, hence develop economic outcomes and deliver social impact.

Digital platforms constitute also the main technological infrastructure of **platform cooperatives** which operate, in important areas such as utilities/energy and environment, distributed services including banking & finance and transportation (car sharing, rental of adapted vehicles for special needs drivers and social/coop taxi). In these areas, the platform cooperative model is disrupting for profit markets by providing interesting social and economic value propositions to users.

Social economy organisations, including social enterprises – unlike many traditional businesses – are essentially human-centred and strive to achieve social and societal impact while ensuring the rights and conditions of the users, beneficiaries and stakeholders of the social platform are respected. Other technologies, such as distributed ledgers and artificial intelligence, or new principles, such as data sovereignty, are being deployed and integrated to the functioning of social platforms. These introduce **new governance models** whereby the roles of beneficiaries, users, producers and consumers are central to the operational aspects of digital platforms and reflect the mission and vision of the social economy.

As mentioned, digital social economy platforms may be able to disrupt long established systems, such as banking and energy, by changing conventional hierarchies, introducing new forms of control of information, new means of governance of distribution of commodities and new ways to address the boundaries between production and use of commodities and services.

Digital social economy platforms may also be deployed to tackle local needs as they enable new ways to address **local challenges via global resources** by operating over the Internet. Individuals and communities can collaborate with other stakeholders **to reach unprecedented scales and scopes** including groups that are not geographically proximal. These technologies may create positive conditions for social cohesion as well as pave the way towards transition to the digital economy. Their existence and operation on regional level allows for connections with local teams and stakeholders, necessary for the successful implementation of their missions and operations.

With respect to ***territorial cohesion***, the strong commitment of the social economy in addressing local challenges positions social economy actors in an essential role for strengthening social and economic cohesion. One important finding of our fieldwork is that the use of digital platforms allows and inspires digital social economy enterprises to connect with individuals or organisations in various ways: B2B, B2C, C2C. Preferred partners are those organisations and institutions with which they share common interests, values, missions, and not necessarily geographical proximity.

The transformative effects of digital platforms are also evident on ***labour practices*** as technology enables the diffusion of atypical work practices and the creation of ***new forms of work*** (e.g. on-call/on-demand work, employee or job-sharing and mobile work, remote provision of services). Some of the changes may be positive (flexibility and a better work-life balance) but they may also cause

[1] A closed (or private) platform is used within an organisation with no interactions with external third parties. Open platforms, conversely, are designed to support interactions with external users.

job polarisation[2] and the 'casualisation' of the labour market, with various negative effects on workers' insurance, working conditions and living standards. Importantly, one major issue associated with the rise of digital platforms concerns the substitution of routine-based jobs by advanced technologies supported and provided via platforms. On the other hand, the upcoming transformation has brought increased attention on the social economy, as some of its characteristics make digital social economy platforms well suited to create more flexible forms of employment giving workers more power to decide how to organise their jobs, and lower the cost of production through the involvement of users and volunteers.

In addition, digital technologies may have a supporting rather than a displacing role considering the importance of non-routine activities requiring human interaction in the social economy. Admittedly, in the cases where social economy organisations employ vulnerable people undertaking routine occupations, there may be disruption. In such cases *platform cooperatives* – which are on the rise globally - may be very important. These are digital (labour) platforms owned, governed and controlled by workers. The platforms allow workers to organise their productive efforts and to have sustainable livelihoods.

Another important issue that is currently under scrutiny at the EU and global levels concerns the ***regulation of platforms***. Specifically, there are aspects concerning workers' rights, sharing activities performed via platforms and their implications for insurance schemes and taxation as well as access and ownership of data transmitted via platforms. In the context of the social economy, regulation needs to ensure that digital platforms are not being used to circumvent workers' rights and, at the same time, allow enough room for innovation and social entrepreneurship. Ex-ante constructive technology assessments and/or ex-post regulation evaluations are considered beneficial as they may allow digital platforms to be evaluated against their potential and effective socioeconomic impacts prior to their introduction on the market or whilst in operation.

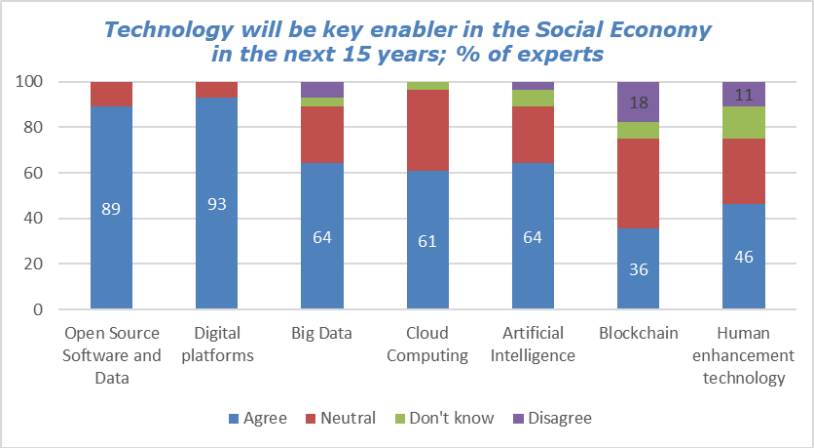
Moreover, platforms may be conducive of new forms of funding and resources collection (**crowdfunding and crowdsourcing**). In practical terms, digital platforms may help connect local stakeholders around communal social projects and then allow them to extend their reach and engage wider, even globally, for funding and resources. In this area, further research is needed to explore whether European legal systems are prepared for these complex schemes as they involve many participants whose role and duties, besides taxation and currency exchange issues, might be moved by different interests.

It is evident that digital social economy platforms have a completely different positioning than their commercial counterparts. In the social economy, platform applications are driven by underlying values, social impact orientation, participatory governance systems, and ethical business and governance models. Therefore, digital social economy platforms may be used to empower users, be their workers, associates or customers, to operate fairly and sustainably, to foster social capital development and to promote the creation of social value in communities.

[2] Job polarisation refers to the imbalance between low-wage and high-wage occupations and the implications brought by technological advancements. Further information may be retrieved from (Borzaga, Salvatori, & Bodini, 2019)

Open Source and advanced technologies in the European social economy

The technology categories we address in this study include Open source technologies, Internet of Things (IoT), Distributed Ledger Technology (Blockchain), Big Data, Cloud Computing and Artificial Intelligence.



Open Source refers to software or hardware. Open Source **Software** (OSS) is a type of computer software in which source code is released under a license in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose. Open Source **Hardware** consists of physical artefacts of technology designed and offered by those that develop them through the use of publicly shared design information; making it closely linked to the Maker movement and Do-It-Yourself (DIY) community.

The expectations for Open Source technologies to contribute to the social economy are very high especially considering that the underlying philosophy of the Open Source movements fits particularly well with the values and principles of the social economy. For instance, the principles of **commons** may be found in both Open Source movements and the social economy. Moreover, the digital social economy and the Open Source movements share many practices and organisational designs such as FabLab, Hackathons and DIY.

Internet of Things (IoT) is the virtual and physical environment wherein sensors and actuators blend seamlessly with the environment, and the information is shared across platforms in order to develop a common operating picture. It is enabled by wireless sensor technologies all around us. Such technological infrastructure may reveal particularly valuable for the social economy; for example, remote sensors and un-manned monitoring may be used in a host of situations from traffic control to environmental monitoring. Moreover, in an ageing society, house-technologies are exceptionally valuable to help independent living.

Distributed Ledger Technology (DLT), including Blockchain, refers to a system of electronic records that enables independent entities to establish a consensus around a shared 'ledger' - without relying on a central coordinator to provide the authoritative version of the records. They are used to collect, store and transfer valuable records securely.

Expectations that DLTs will contribute to the digitalisation of the social economy as very low amongst expert especially considering that the technology is still in development phase, the initial high expectations linked to cryptocurrencies is now subsiding and major investments are currently carried out by large technology corporations. On the other hand, however, we are starting to see interesting applications of DLT and blockchain in the social economy especially in field actions in support of mass migration, social energy, community banking, finance and distributed democratic management. These examples are showing that there are valuable opportunities in DLT and blockchain deployment in the social economy (EESC, 2019).

Big data are voluminous amounts of structured and unstructured data. The potential value of big data is unlocked only when leveraged to drive decision-making, through data management and analytics. Big Data Analytics refers to techniques used to analyse and acquire intelligence from big data. Challenging (regulatory) issues about big data include privacy and security. Nonetheless, the use of big data and analytics are critical in large socio-technical systems such as e-government and healthcare. In medicine and healthcare, for instance, they cover integration and analysis of large amounts of complex heterogeneous data such as genomics, biomedical data and electronic health records data.

Artificial Intelligence (AI) refers to the computational, inferential and learning ability of digital tools (machines) to process, interpret and act upon data and information in a manner similar to humans. Expectations regarding the successful application of AI to the social economy are only just forming. 'AI for Good' initiatives and high level of institutional involvement at the national and European level are looking into the effect of AI applications on human relationships. Whilst the technology may open great opportunities for the creation of social value, oversight and regulations are essential in order to foster and maintain an environment that is fair and respectful of human rights. The social economy is particularly well placed to serve such collective ends and may have a role in steering AI technological development in line with its values and principles.

The motivations for using **Open Source and advanced technologies** may depend on economic convenience (for example, Open Source Technologies are particularly accessible compared to expensive proprietary technologies) and the opportunity to avoid vendor lock-ins for the users. However, there are many aspects such as the underpinning Open Source communities values, connectivity (linked to community building) and the responsible deployment and use of digital technologies that are distinctive of the social economy; the social use of these technologies may certainly foster the modernisation of the social economy (digital transformation). In other words, the integrated use of **advanced technologies,** especially for their characteristics – interoperability and use of open standards – is important and relevant to many technological domains.

Of course, not all social economy enterprises are eager to pioneer and adopt the latest new technology that has not fully matured. Validating and testing new technologies for the social economy is much more complex than merely assessing its market potential. The technology should also be assessed for its various positive and negative social impacts. Prototyping such applications for social innovation is not done in laboratories under controlled conditions where the technology can be applied, tested and assessed by a regulating authority on its positive and negative impacts. Assessing the desirability of applying new technology is often resting on the social and ethical values of the involved social economy actors. In this respect, the **social economy often regulates itself**.

The increasing presence and importance of distributed information systems and the growth in embedded sensors, results in large amounts of data. These present interesting opportunities for data mining, predictive data analytics, artificial intelligence, virtual and augmented reality; however, it also raises new issues related to **privacy, security and the protection of intellectual property**. In situations where trust is critical (i.e. when vulnerable groups are involved) these issues need to be taken into careful consideration and the values and principles of the social economy provide an appropriate framework.

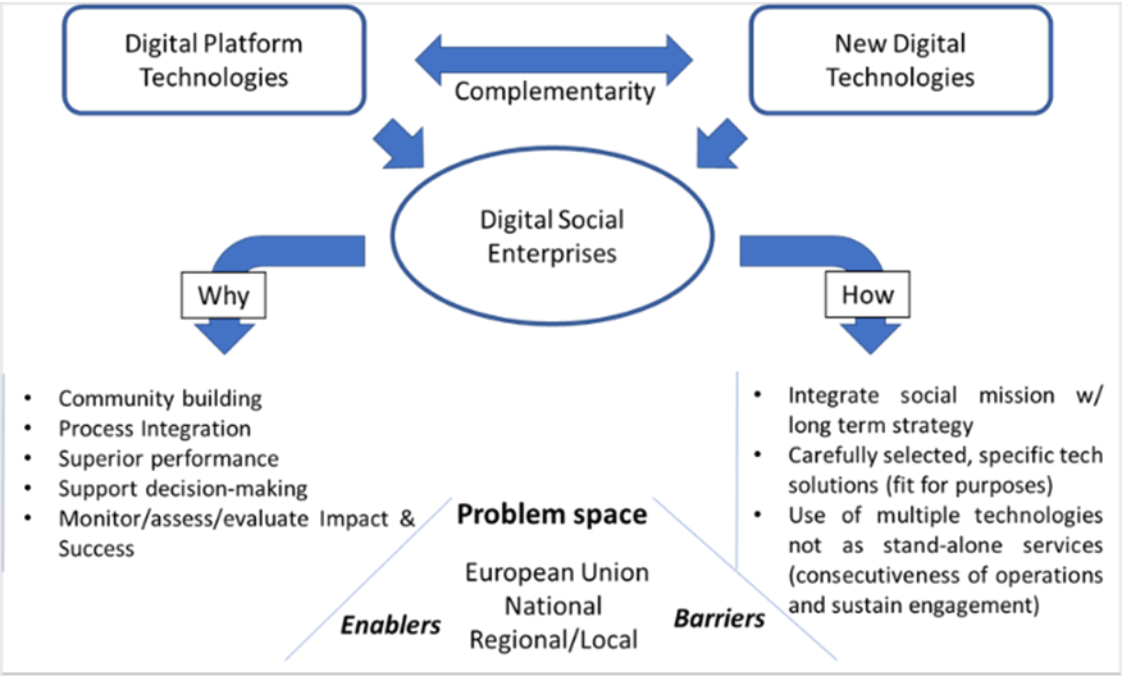
In the sharing economy, phenomena such as crowdfunding and crowdsourcing, the 'maker-economy' and 'do-it-yourself' and crowd-production are increasingly being digitalised and distributed across various stakeholders not necessarily co-located. In these instances, blockchain technologies can have a strong enabling effect through smart contracting and identity management. For the social economy, transparency and related issues, such as security, are often more important than the question whether the software used is Open Source or not. Issues such as transparency, and the creation and governance of a community for example, cannot simply be reduced to the question of software licensing, or how data is being managed. In relation to social and societal impact, costs and benefits need to be considered. Moreover, the development and application of digital technologies are promoting new value propositions, social products and services that may not exist without the support or inspiration of digital technologies.

Conclusions and Policy Recommendations

The conclusions and recommendations of this study have been drawn keeping in mind the complex nature of operations in the social economy and the implications of the uptake and integration of digital platforms and advanced technologies *vis-à-vis* the (external) socioeconomic context within which the social economy operates. We have for instance shown that the socioeconomic context differs between Greece, Italy, UK and the Netherlands. The digital social economy cases which have been analysed according to our analytical framework, have therefore been contextualised in a policy space, addressing enablers and barriers at EU, national and regional level. The resulting policy

recommendations are therefore tailored to the nature of social economy initiatives (to achieve social and societal impact); the necessity for longer-term prosperity (consolidation of the digital social economy and growth); and with the opportunities and challenges associated with the introduction digital platforms and advanced technologies.

The figure below illustrates the process and highlights how and why promoting collective actions for digital transformation may be beneficial for the social economy. In particular, integrating the social mission with a long-term strategy and using digital platforms and other advanced technologies tailored according to the principles of the social economy may have a direct impact on community building. The modernisation of the social economy may proceed through process integration therefore delivering superior performance and effective decision-making. The adoption and application of digital platforms and advanced technologies also provide comparable elements for the evaluation, monitoring and assessment of the social impact generated. These are only a few of the reasons identified in this study in support of the digital transformation of the social economy. It provides ample incentives, both to existing social economy organisations to embark in the digitalisation process, as well as to social start-up to **think digitally first**, hence start operations as digital social organisations.

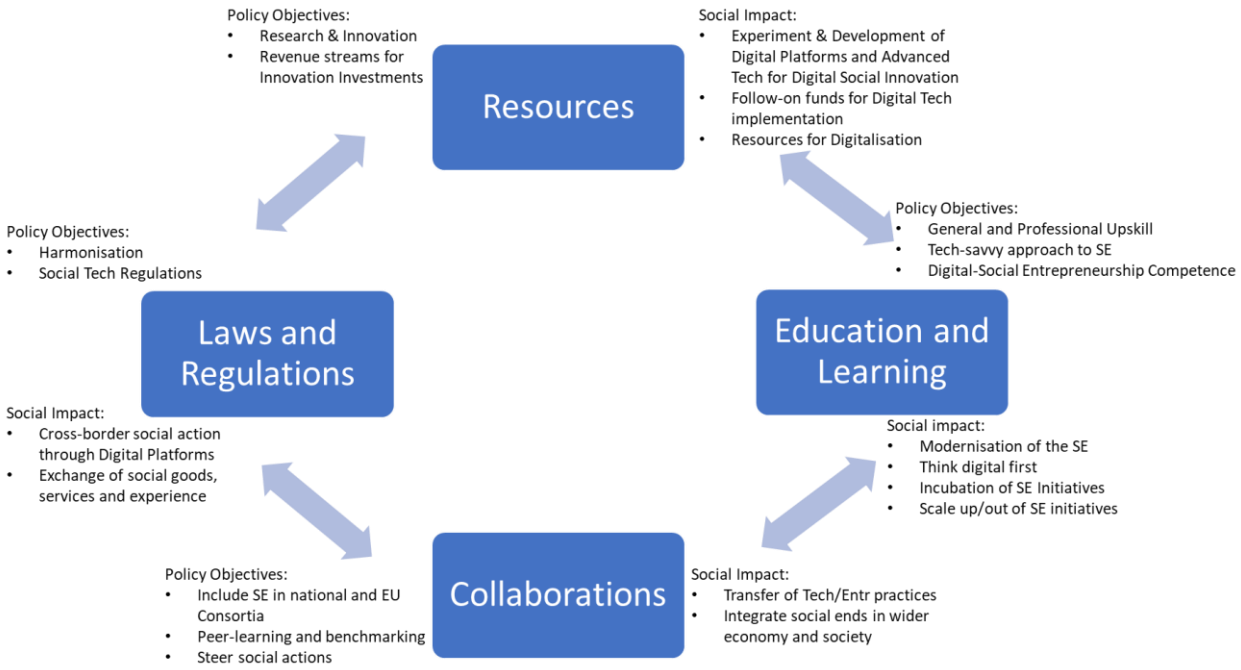


Of course, as it has been outlined, specific digital technologies open to great opportunities for the social economy. From a policy perspective, especially at the national and local level, there is ample scope to foster FabLabs, Makers Movements and DIY initiatives for the uptake and diffusion of Open Source technologies (Software and Hardware). Likewise, supporting Hackathons and field experimentation encourages social economy organisations and social entrepreneurs to tinker and experiment with DLT and blockchain, Artificial Intelligence and Big Data/Analytics. In fact, in these areas, initiatives such as 'the Social Cloud', 'AI-for-Good' and various 'blockchain-for-good' initiatives are already making enormous strides in advocating and disseminating digital technologies and applications within the social economy. These are emerging (as 'commons', 'tech-cooperatives', social economy enterprises, etc) in sectors as varied as energy & environment, banking & finance and health and social care.

On a higher policy level, however, there is a great need to **rethink the roles and contributions of the social economy within national and European contexts**. As mentioned, the social economy is an important player in modern economies; yet, in nation-wide industrial and digitalisation strategies, the position of the social economy is at best marginal. Of course, in many national policy frameworks, social economy organisations are not in principle excluded from active participation under the same conditions as SMEs and traditional start-ups. However, social economy organisations operate under different circumstances, with various objectives and certainly according to social values

and principles different from those of traditional businesses. Therefore, it may be difficult for social economy organisations, including social enterprises, to benefit from industrial, innovation and digitalisation policies thought and designed for traditional businesses.

In the following figure, we highlight the main high-level policy areas that may have a beneficial impact on the digitalisation of the social economy.



We grouped these areas as such: 1) **Access to Resources**, including resources for research and innovation as well as to market and revenue streams. 2) **Education and Learning**, including professional and users' digital skills and digital social entrepreneurship competences obtainable either through formal education programmes or through coaching and learning-by-doing. 3) **Collaborations**, including those with other organisations of the social economy, with traditional businesses, with universities and government agencies. 4) Finally, we identified **Laws and Regulations** concerning the social economy as a critical issue (i.e. harmonisation of social economy organisation legal definitions across EU Member States; and adapt regulations to emerging technologies, platforms and sectors).

Access to Resources

The digitalisation of the social economy requires at least two important points of access to resources. The first for experimenting and developing digital technologies, digital platforms and advanced technological applications, fit for the needs of the social economy. The second regarding pathways to income generation, a minimal condition to operate dependably.

The first critical resource for the digital transformation consists in **research and innovation (R&I)**. Through R&I activities organisations may carry out exploration of new technological combinations and integration of the technologies within the social economy. These activities are not currently deployed to their full potential: in the social economy, R&I are not structured and systematic. Hackathons and open labs/demonstrations, although necessary, are not sufficient to promote a social economy-wide digital transformation.

The European Union is investing greatly in R&I, for example, through its Framework Programmes, Structural and Social Funds. The Horizon Europe programme, which will begin in 2021, earmarked some €100Bn for research and innovation. In the absence of specific national R&I, for many social economy organisations these are the only sources of research and innovation funds. Many important research and innovation projects undertaken, for example under the H2020 banner, have specific technological objectives including platform technologies, DLTs and blockchain, AI, Big data and

analytics, cloud computing and Internet of Things. Social economy organisations have a marginal presence in such projects. ***The EU should boost active measures of inclusion of social economy organisations in R&I, especially in those technological areas (digital platforms and advanced technologies) that may contribute to the modernisation of the social economy***. At the same time, the excellent research outcomes of the programmes are rarely translated into tangible benefits for the social economy. In particular, there seems to be a lack of opportunities and support to translate proof of concepts into distributed digital social innovations. In other words, the programmes, whilst providing valuable resources to initiate the research and innovation process, stop short at applications and wider diffusion. In fact, ***R&I programmes should provide follow-on funds for piloting/prototyping, testing and deployment of technologies***, which are essential in order to set out appropriate exploitation strategies. This is a critical aspect, especially with new and emerging technologies such as cloud computing, AI, distributed ledger technologies.

National effort on the digital transformation of the social economy is not exempt from structured and systematic R&I investments. In many European countries, specific SBRI-type programmes have revealed to be very efficient public investments for the development of specific applied technologies and particularly effective to bring new innovations to the market[3]. ***Digital social economy organisations should be involved in such programmes and, if necessary, SBRI-type initiatives should target digital social innovation.***

Moreover, national digitalisation campaigns are thought out and designed to target the digitalisation of traditional businesses and do not provide specific support for social economy organisations. For example, the Italian Innovation Fund, which is strongly oriented towards Industry 4.0, does not exclude social enterprises (social enterprises, for example, are eligible at the same conditions of SMEs) but the main actions are oriented towards the business economy. Nonetheless, the Italian Innovation Fund's forward-looking approach is moving towards integrating the social economy within its purview, but specific actions concerning the social economy - including cooperatives, digitalisation of the social economy and circular economy - are at the 'feasibility' stage.

Hackathons and bootcamps, hands-on demonstrations and open lab spaces are currently the main source of R&I activities in the social economy and are usually undertaken at a **local level**. The monetary investments to develop hackathons and bootcamps initiatives are usually rather contained. Nonetheless, these are extremely effective to spur and diffuse local engagement. They are particularly efficient in recombining, trying and testing, on the field, advanced digital technologies. Therefore, ***Hackathons, Bootcamps, FabLabs and other hands-on tinkering, experimenting and demonstrations activities should be encouraged***. A long-standing European programme such as Interreg Europe[4] is particularly well positioned to support local governments and actors through digitalisation actions across different areas. For example, it has been particularly successful in areas such as villages and rural communities, smart cities and digital regions[5]. Digital Innovation Hubs, operating at the local level may be involved more actively in supporting the agenda of the digital transformation of the social economy. ***Regional and local authorities should engage in national and European programmes promoting digital social innovation initiatives at the local level. Too often social innovation is contrasted with, and separated from technological innovation.***

[3] SBRI are public Small Business Research and Innovation investments assigned competitively to strategic technology and innovation projects carried out by small business. These types of programmes are particularly successful in promoting small businesses research and innovation. Social economy organisations are, in principle, not excluded from applying and in many cases, they do obtain R&I grants and even continuation grants and support. Nonetheless, these schemes are particularly well suited for social economy innovators since in many case (such is the case of the Dutch Small Business Innovation Research led by the Netherlands Enterprise Agency) the supported topics include social and societal challenges, environment, energy & sustainability and social security.

[4] https://www.interregeurope.eu

[5] Also the Digital Innovation Hubs (https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs) whilst covering many interesting technological domains including digital platforms, big data, artificial intelligence and robotics, focus exclusively on traditional businesses issues (research, investments, incubators etc) for start-ups, SMEs, large companies and business associations.

Research and innovation activities performed by international consortia either supported by national digitalisation programmes or carried out on the field through hackathons, FabLabs and demonstrations are but the first step to generate knowledge and understanding of digital platforms and other advanced technologies by the social economy. A more tangible approach to translate these technologies into valuable applications to be picked up, adapted and used within social economy organisations requires further resources and investments. As mentioned, at the EU level, especially through the Framework Programmes, follow-on funds may reveal key to initiate the process of translation of research and innovation outcomes into piloting and deployment activities. National experiences such as SBIR-type programmes demonstrate that follow-on activities ('second' and sometimes 'third round' grants) provide successful avenues for innovation, including digital social innovation. Nonetheless, bringing these technologies to full operation within a social economy organisation may require further investments by the social economy organisations willing to scale up/out and adopt digital solutions.

This aspect brings us to the second critical issue: **sources of revenue**. Social economy organisations employ their revenues to ensure economic sustainability and eventually innovation and growth. They increasingly see digitalisation as an optimal strategy for achieving both social impact and growth; also, an increasing number of digital social economy start-ups are using technologies from the onset to integrate their operations and provide interesting digital social value propositions. Nonetheless, we shall not forget that in many areas of the social economy, especially in social services and in deprived areas, revenue streams may not compensate for the actual or prospective social impact. In these contexts, the public administration, government and public authorities remain the biggest source of social innovation demand. **Innovation procurement** that promotes simultaneously social and digital prospects is an appropriate means to favour the digital transformation of the social economy. Procurement is a critical source of funds and engagement for the social economy. Its innovation policy impact extends across the three levels identified above (European, national and local). Social and societal impact considerations in current innovation procurement practices across Europe, Member States and local authorities are currently very fragmented. There are few examples of good practices and these are rather insufficient to accrue an impact above their circumscribed context.

Innovation procurement should include clear objectives targeting the digital transformation of the social economy and refer to specific advanced digital technologies, their combination and applications. For example, especially for procurements involving social services, the terms of the contracts should include platform-type relationships (perhaps through a two-sided platform), a secure digital data management plan (DLTs) and shared (secure) archives on the cloud. Moreover, ***preference in commissioning should be given to open technological applications*** that, in serving the needs of the public contractor, may be adapted and redeployed for other social purposes.

Governments' and public agencies' innovation procurement commissioning should include objective considerations of social and societal impact. Such provision contributes to level the playing field for social economy organisations that are at a disadvantage in competing with traditional for-profit businesses for public contracts. For example, proposal evaluation should assign a certain weight to considerations of social and societal impact. This should be considered together with other evaluation criteria such as convenience, price and value for money which are currently the only criteria deciding on commissioning[6].

The EU, national and local governments should experiment with alternative ways to enhance access to resources for the social economy. New schemes such as social impact bond and smart contracting are becoming increasingly popular and they may be used to direct the effort

[6] As discussed in Chapter 5, many of such provisions are already considered in procurement regulations; however, these are not implemented or taken up local procurement agencies. See for example: https://www.socialplatform.org/public-procurement/ and a recent publication (McEvoy, 2019). These advocate social considerations into procurement; yet, objectives concerning the digitalisation of the social economy are not expressively considered.

of the social economy towards pressing social and societal issues and, like innovation procurement, to foster the modernisation of the social economy.

Skills, Education and Training

Skills, education and training present rather complex issues. These are discussed throughout the study (cf. Section 1.4; Section 2.2; Section 3.2 and Section 5.3). Such issues span across several domains including ICT infrastructure, professional ICT competences, social economy's labour relationships, users' skills and digital social economy entrepreneurship. Skills, education and training in these areas may be provided through formal education, coaching and on-the-job training and involve hard skills such as digital architecture design, programming and coding, and digital technologies proficiency as well as soft skills such as future skills, management and strategy. These skills and capabilities should operate upon an adequate ICT infrastructure. These include ideally 'high-speed connections' and widely available connectivity. Moreover, stakeholders and users should be at least digital literate implying a widespread proficiency of basic digital competences (See figure 9, 2006/962/EC)[7]. Focusing on the entrepreneurial aspects driving the digital social economy agenda, social entrepreneurs should be able to combine the skills and competences from the social economy with business acumen and technological capacities[8] therefore act as integrator across the complementary domains.

From our study emerged that one of the most important steps is providing the framework conditions for a digital social economy by ***'developing and nurturing a tech-friendly environment for social economy entrepreneurship'***. This includes, as mentioned, an adequate level of digital infrastructure as well as access to technologies such as open Application Programming Interfaces (aka API, the engine of digital platforms), open source software and hardware, and other advanced technologies, management, strategic and other soft skills for social entrepreneurs.

In providing a policy overview towards the digital skills 'upgrade' of the social economy, we should consider that the social economy's approach to learning is principally through 'case-based/reactive learning'. That is, faced with social or societal problems, the social economy devises strategic approaches towards reaching desired solutions. The extent to which such practices may produce distributed digital social innovation is linked to the level of digital maturity. The emergence of digital social innovation may range from the deployment of simple digital applications, for which only basic digital skills are needed, to the introduction of new digital architectures, for which advanced technical skills and a forward-looking vision may be required. This is particularly important since in an interconnected and digital world, challenges may either be related to digital technologies and their applications or solved by applying digital technologies.

It is necessary that the social economy has appropriate space to carry out learning activities oriented towards structured problems concerning proactively its digital future rather than react to social and societal challenges. To do so, it is necessary to assess the state-of-the-art of the digital transformation of the social economy – with particular focus on skills, technologies and practices. This will constitute the base upon which to build on education and learning needs. ***Policies, at all levels, should consider skills, education and learning objectives oriented towards enhancing the capacity, skills and competences of the social economy to interact within an increasingly digital world.***

At **the EU level**, digital skills are very high in the policy agenda. For example, the President von der Leyen's Commission places digitalisation at the core of its agenda for employment, social fairness and welfare for tackling social exclusion and poverty, promoting equality through social security, education

[7] Basic digital competences, as defined by the 2006 Recommendation of the European Parliament and of the Council on Key Competences for Lifelong Learning (2006/962/EC) refer to "*the confident and critical use of information society technology for work, leisure, learning and communication*". These competences are underpinned by basic skills in ICT such as the use of computer to retrieve, access, store, produce, present and exchange information, communicate and participate in collaborative networks.

[8] There are different levels of technological capacity that refer to the various levels of digital maturity. These may have an entry point in basic business skills and develop across social and business applications through to more advanced technical skills such as system integration and new digital architecture design.

and infrastructure. This renewed drive is set out to re-invigorate the initiatives already in place such as the *New Skills Agenda for Europe* and the *Digital Skills and Jobs Coalition* with the ambition to develop a comprehensive education and training framework aimed at a digital social economy fit for the 21st century.

Based upon the experience gained during the development of the DigiComp and EntreComp and the positive outcomes and impact they are achieving, ***the EU should design a 'DigiSEComp' (Digital Social Economy Competence Framework) to develop the skills and competences of the Digital Social Economy***.

Another critical outcome of our study highlights that many digital social economy organisations, do not stop to explore new possibilities and opportunities of further digitalisation. In particular, it emerged that digital social economy organisations are conducting routine scouting activities as integral part of their ongoing operations. These organisations are constantly looking for new ways to increase efficiency, boost effectiveness in carrying out operations and introduce new ways of doing things or new services and products. It is also important that directed effort by the EU is devoted to collect, systematise, analyse and disseminate widely those good practices of digitalisation of the social economy and its operations in order to provide digital social economy organisations and those willing to embark into a digitalisation strategy with best/good practices use-cases. Far from suggesting that these become templates for replication, they provide the most valuable learning tool for benchmarking own operation and indications of pathways to successful digitalisation to social economy entrepreneurs. ***We therefore recommend that the EU reinvigorates its efforts in collecting, analysing and systematising good practices of social economy digitalisation, highlighting new digital design, learning outcome from digital transformation and social value creation through digital means.*** It is necessary that such activities are carried out centrally (at the EU level) and disseminated across Member States via regional and local associations as well as any other reference point of the social economy in order to achieve a capillary reach.

The national level is the natural setting for the development of education and learning curricula from primary education to higher and lifelong education. The objective should be that of integrating the skills and competences needed by the social economy both in terms of digitalisation and include management, digital social innovation, strategy and digital social entrepreneurship. In other words, national governments should engage in raising awareness of the importance of the social economy and the digitalisation process with specific reference to the application of advanced technologies, digital management practices, digital social innovation and strategies for the social economy. National government should take the opportunity to capitalise on existing teaching and learning networks to foster the digital social economy agenda for skills and competences. ***National student competitions, hackathons, digital social innovation workshops should be organised to include integrated digital, entrepreneurship and social economy programmes.***

Of course, such initiatives should not be carried out independently from national and local social economy organisations and associations. ***National government should form new or equip existing national associations of social economy organisations and networks of social economy clusters to provide advice on the digital transformation to budding social economy entrepreneurs, their active members and associates***.

Moreover, in the higher education sector, there are numerous emerging programmes including undergraduate and graduate courses, executive and further education programmes engaged in training and education for the social economy. This is true also for research of new technologies, new technological applications (development and translation). In fact, in many universities across the EU there are increasingly learning programmes and academic research activities including social entrepreneurship, digital technologies for the social economy. Also, in many circumstances, traditional university institutes such as incubators and accelerators are focusing on staff's and alumni's social projects providing coaching and guidance through their start-up process. Therefore, ***national governments should encourage federations of national research centres and universities to conduct research and teaching for the digitalisation of the social economy.*** It is, in fact,

critical that access to research-based education for the digital social economy becomes part of the mission of these nation-wide networks.

Skills, education and learning activities are delivered to individuals often through blended learning, in face-to-face settings including demonstrations with online/digital means and support. **Local initiatives** have an extremely important role to play in setting up and promoting such activities. ***Local authorities should endeavour to work with schools, universities, clusters and local technology incubators and accelerators and other instituted organisations.*** What we suggest is that local authorities should take advantage of the opportunities offered by existing programmes and initiatives available within the community and refer to European initiatives already operating within the region. For example, local authorities may need to take a more active role in the Digital Innovation Hubs or the Digital Skills and Job Coalition[9] in order to promote locally those skills, education and training for the digital social economy agenda.

At the local level, many opportunities are currently being explored albeit in a non-systematic manner. For example, some schools and adult/further education establishments are interacting directly with the social economy and with digital social economy entrepreneurs to organise action-learning initiatives. These interactions bring to the fore issues linked to the digital transformation of society, social and societal challenges and issues such as the environment and the circular economy. To this extent, we recommend that ***regional and local authorities support schools and education centres to involve digital social economy entrepreneurs for hands-on demonstrations and action learning***.

In the last decade, universities have been ramping up their involvement with the social economy by undertaking research and teaching reflecting upon the third mission[10]. Also, advanced programmes, specific to the digital social economy, are increasingly integrated in technology, entrepreneurship and innovation programmes, i.e. master level. Clusters and technology incubators and accelerators, often delivered in partnership with entrepreneurial universities, are already present in many European regions and have demonstrated to be particularly effective in knowledge transfer and applications in a number of sectors[11]. In brief, there is a host of initiatives carried out locally in numerous parts of the Union, which focus on the social economy, digital social innovation and digital social entrepreneurship competences.

Based on the evidence collected during this study, ***universities should be encouraged to work with other teaching institutions and social economy partners in order to integrate structured and advanced teaching and learning focused on the skills and competences of the digital social economy***. In fact, in chapter 5, we highlight that many universities in the EU are already engaged in such training and learning activities carried out by extending undergraduate and postgraduate programmes to digital social economy topics through, for example, collaborations with social economy entrepreneurs and organisations for focused/targeted executive education programmes.

There are many synergies between traditional start-ups and social economy start-ups in terms of knowledge and technology transfer. These are going beyond the boundaries of formal business skills, education and learning organisational settings. Such synergies may be exploited by opening up science parks and traditional business start-up incubators to social economy start-ups. In fact, operating in locations with high tech intensity, side-by-side tech-businesses and entrepreneurial

[9] In fact: "*All organisations who take action to boost digital skills in Europe can become members of the Coalition and pledge to take actions to tackle the digital skills gap. Actions can range from training unemployed people, giving MOOCs for teachers, offering coding classes for children or cutting edge training for ICT specialists*" (https://ec.europa.eu/knowledge4policy/online-resource/digital-skills-jobs-coalition_en).

[10] The third mission of universities consists in generating and transferring relevant knowledge outside academic environment for the befit of social, cultural and economic development.

[11] Although the early biotechnology cluster initiatives disseminated throughout Europe had contrasting impact, the concepts of clusters, incubators and accelerators are seeing resurgence and are registering interesting results in terms of outcomes and impact at the local and national level (http://www.clusterobservatory.eu/index.html)

higher education institutions, the social economy may find its place in a tech-friendly environment conducive of digital social innovation. The objective is to activate virtuous cycles benefitting the local communities and the social economy. ***Local government and development agencies should promote and provide incentives for the integration of social economy start-ups in existing technology and innovation incubators.*** These initiatives should necessarily include intermediaries, co-working spaces, and digital/social entrepreneurship coaching/mentorship.

Fostering Collaborations

Policymakers and the social economy should exploit the enabling features of collaborations. Through collaborations, social entrepreneurs and organisations can work towards specific tasks that each alone would not be able to tackle. Collaborations also spur shared learning. During collaborative work, each party may learn from their peers.

Intra social economy collaborations are the most diffused form of collaborations within the social economy, such organisations engage in collaborative exchanges of information and practices with peers operating according to similar values and principles. These are very important since they constitute a form of mutual learning in addressing social and societal challenges. This way, social economy organisations exchange experiences in carrying out social action as well as sharing experiences connected with the digital transformation highlighting changes in their operations, carrying out their digital strategy and giving/receiving guidelines and advices in solving impending issues. These collaborations may be undertaken within the boundaries of associations such as European-wide associations or nationally where some association such as Social Enterprise UK and Lega Coop or ConfCoop in Italy organise collaborative events. Alternatively, collaborations may happen independently, perhaps at a more local level between social economy organisations with their users, beneficiaries and other stakeholders sharing similar issues or collaborating to solve collectively social challenges by setting up co-creation and co-production processes.

Social economy organisations may engage in collaborations with other organisations outside the social economy: governmental agencies, for-profit companies. For example, collaborations between social economy and for-profit organisations may provide ample space for learning and in a fast-paced digital world. The examples of Simplon in France, Mfore in Finland and Elderbrook in Germany evidence substantial benefits for – and learning by – the social economy from their business collaborative counterparts. The SBI follow-up report (2018) highlights also that such collaborations, especially in areas of social training, healthcare, and social care for the elderly, started-up longer term technology-focus projects.

Fostering the agenda of digitalisation of the social economy key collaborations may be undertaken with research centres, consultancies and ICT companies that are already engaged in research and innovation and may help with the knowledge and technology transfer process. These may enable social economy entrepreneurs to identify appropriate digitalisation strategy, fitting technological applications and ultimately may engender processes of development and adaptation of novel technological solutions to the need of their beneficiaries as well as to their own social economy enterprise.

In the section dedicated to Access to Resources above, we have identified that enhanced access to R&I collaborations programmes is the way forward to incentivise the social economy to carry out structured digitally related research, development and innovation activities. ***The EU should therefore support active engagement of social economy organisations in R&I projects especially those involving collaborative undertaking focusing on digital platforms, Open Source, DLTs and Blockchain, AI, Big Data analytics and IoT.*** The rationales for such collaborations are multiple. For example, a significant share of the R&I projects calls in many EU programmes is concerned with social and societal challenges. The social economy has traditionally been at the forefront of these challenges and social economy organisations have a host of valuable experience in dealing with such issues. These may be transferred to the R&I collaborative undertakings and the social economy may benefit directly from technological solutions deriving from R&I projects. In addition, engaging social economy organisations in large collaborative projects also

have the advantage of introducing the principles and values of the social economy in what would otherwise be R&I with marketable objectives.

There is no doubt that collaborations amongst social economy organisations and between social economy organisations and other parties (government, businesses, users) may be conducive of benefits and opportunities for the social economy. Collaboration may help the diffusion of best practices, peer-to peer learning in digitalisation and benchmarking and assessment of social impact. It is critical that the digitalisation of the social economy relies on **national** fora promoting open collaboration, including government agencies. For-profit businesses may be incentivised to collaborate.

National governments should provide incentives and support to collaborative digital social innovation activities, which may produce spill-overs beyond the parties involved, such as positive effects on social and societal impacts, modernisation of the social economy and generation of economic and social value. Incentives may not necessarily consist in the allocation of extra funds for the social economy, which nonetheless will be beneficial as in the case of 'Public Social Partnerships' set out in Scotland[12]. Incentives may consist in leveraging 'in-kind services' and technology transfer as in the case of France where current legislations provides 60% tax incentive to private companies to 'lend' their staff to social economy organisations or transfer dismissed ICT equipment to social enterprises.

Governments have strong incentives to subsidize the development of Open Source technology, especially when the social returns are high and the private returns are low. It is the same argument that forms the rationale to subsidize R&D and especially basic R&D.

Another aspect to take into consideration is that proximity favours direct interaction that may lead to collaborations. Social economy actors may collaborate with peers with similar digital agenda and programmes, facilitate exchange of knowledge building digital skills and competences and calibrate technology deployment collaboratively with users and beneficiaries.

Most of such interaction happens at the regional and local level. ***It is therefore recommended that regional and local authorities promote (physical and online) collaborative spaces, such as maker spaces, living labs, cluster organisations, digital innovation hubs, technology incubators and accelerators in order to enable collaborations between the various stakeholders of the social economy including universities, for-profit tech companies, and local government agencies.*** Incentivising local collaborative initiatives to develop digital social innovation as direct responses to local and regional social issues may be a valuable way to engage with local stakeholders. These collaborations aim at modernising the local social economy and at the same time, provide locally developed solutions to social issues. These may be enacted by promoting activities such as the public social partnerships described above or involve traditional businesses in sponsoring civic crowdfunding[13] initiatives to provide local solutions to social problems. The involvement of universities are essential for R&I activities and education and training. Moreover, university-social economy collaborations may also foster longer terms partnerships whereby 'useful' technologies and technology governance models may be co-created and deployed more effectively given the complementary competences of universities and social economy organisations.

[12] Public Social Partnerships (PSPs) involve organisations from the public sector, businesses and the social economy. They are designed to involve the third sector earlier and more deeply in the design and commissioning of public services. https://www.gov.scot/policies/third-sector/public-social-partnerships/. The Scottish Government promoted 6 such partnerships with an investment of £3.5 mil between 2012 and 2018. PSPs are engaged in re-designing social services and their delivery in key strategic social areas. They have also included specific technological and digitalisation targets: https://www.gov.scot/publications/report-date-strategic-public-social-partnership-psp-model-scotland/

[13] Civic crowdfunding is a subtype of crowdfunding whereby citizens, sometimes in collaboration with local governments, collect and fund local regeneration projects. As mentioned in chapter 5, these initiatives are becoming a significant reality in many post-industrial cities.

Laws and regulations

Harmonising at an EU level the plethora of legal forms of social economy organisations is particular important when considering cross-border activities, such as international social and societal actions, international collaborations (also in R&I programmes) and cross border provision of good and services (increasingly common through digital platforms). Harmonisation will help social economy actors and organisations, including social enterprises, to quickly and effortlessly identify appropriate counterparts in other areas. Moreover, it is also important to understand that operating with advanced technologies in the social economy may introduce ethical and governance issues that transcend national boundaries, laws and regulations.

The EU should harmonise the legal forms and statutes across its Member States. Of course, it should also be understood that social economy organisations may have several legal forms, and, especially at the start-up phase, there might be the need to operate in less burdensome organisations. For example, in Greece, many of the new digital social economy organisations do not have a legal denomination. However, it is necessary that legal forms are commonly understood and mutually recognised across the 27 Member States (and eventually, within the EEA).

The use of digital platforms and advanced technologies such as DLTs and blockchain, AI, Big Data and analytics and IoT, originally developed and implemented by and for the business economy, may clash, as we have seen in chapter 3 and 4, with the principles and values of the social economy. For the digital transformation of the social economy it is necessary that the introduction of these digital artefacts reflects its principles and values, and, in each country, it is necessary that experimentation and rigorous evaluations are undertaken under controlled conditions. Questions such as 'what are the consequences of developing and deploying advanced digital technology for inclusiveness, (digital) democratic governance and data sovereignty?' should be answered before committing to technology adoption. To this extent, ***national governments should provide regulatory sandboxes, conduct ex-ante constructive technology assessments and ex-post regulation evaluations.*** This is particularly important especially in such areas where both the practical and ethical consequences of the deployment of digital platforms and advanced technologies may be affecting social and economic relationships. As a consequence, ***national governments should also identify practices of misuse of platforms or digital technologies and use these as lessons for further improvement.***

1 INTRODUCTION

1.1 Aims and objectives of the study

The European social economy is characterised by the coexistence of small and very innovative, digitally-enabled social economy initiatives and established social economy organisations. There seems to be a gap, which is especially evident when we consider the emergence of fascinating new opportunities provided by new technologies and digital organisational forms. Open data, the power of citizen science and crowdsourcing, the rise of open hardware, the boom of digital democracy, are just a few of the opportunities offered by technological applications in support of societal challenges. Game-changing innovations such as digital platforms, and advanced technologies including Distributed Ledger Technologies, Artificial Intelligence, Cloud Computing, Big Data and Analytics, amongst others are currently turning the sectors of health, care, waste management or education on their heads. Yet, for the benefits of such technological innovations to be reaped by the social economy, it is crucial to scale up, or indeed scale out, these advances and turn them into large-scale opportunities.

The present study **explores the rising importance of the social economy in the context of the rapid digitisation of all aspects of social and economic life** (Figure 1), and in particular:

- the **opportunities and challenges that digital technologies** – and more specifically digital platforms and advanced technologies – **pose for the social economy**;
- the **digitisation process of the social economy** including social enterprises through the detection and in-depth analysis of relevant initiatives in four selected EU countries: Greece, Italy, The Netherlands and the UK;
- the **possible futures and potential trajectories of digital platforms and advanced technologies within the social economy**, through the involvement of a pool of international experts on digital and social economy matters.

On the back of the evidence collected we propose a series of **recommendations as well as practical guidelines** to EU and national policy and decision-makers as well as social economy actors for the promotion and support of the digitalisation of the social economy; **encourage the uptake/scale-up/scale-out/duplication** of (innovative) digital technologies initiatives by the social economy using **good practices** from the four countries explored; and overall **achieve a better understanding** of the ways in which the design and implementation of policies and initiatives at EU and national levels can support the digitalisation of the social economy.

Within this context, we have organised this report in the following manner, schematically presented in Figure 1 below:

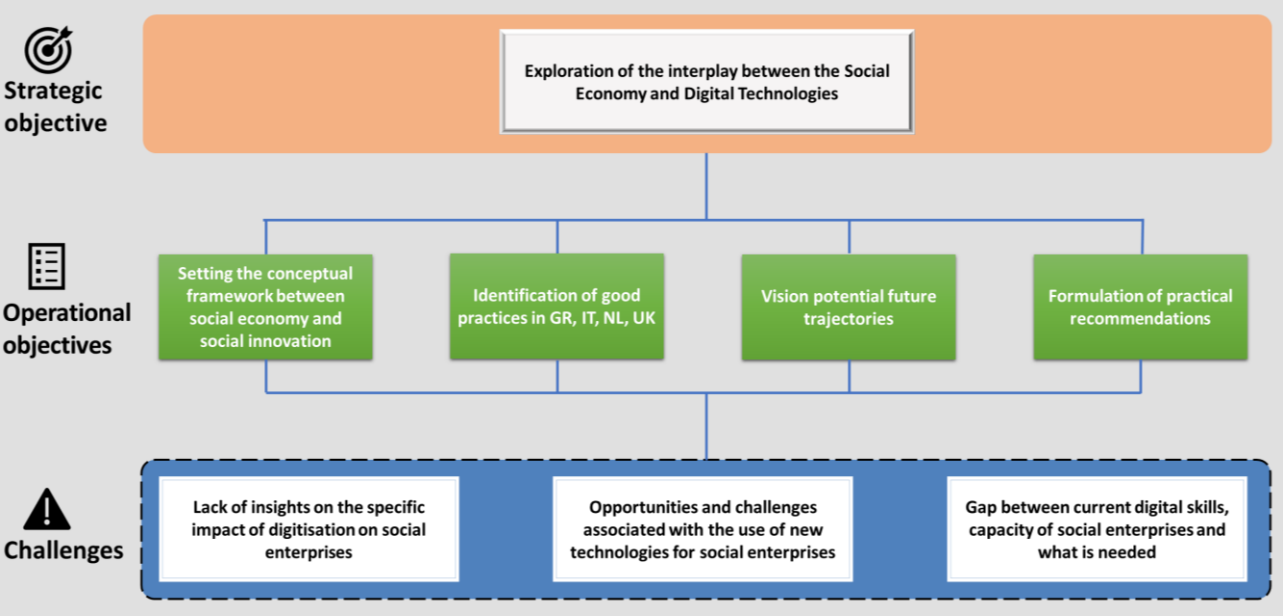
In chapter 2 we introduce our **conceptual framework,** constituting the lens through which we bind the aspects of the digital transformation with the elements of the social economy, and set the criteria for our subsequent analysis comprising examples of operational digitally-enabled social economy enterprises in the four countries object of this study.

In chapters 3 and 4 we study how digital technologies – **platforms and new/advanced technologies** – are deployed to produce socioeconomic and environmental impact. In particular, we looked for lessons for scaling-up or scaling-out (replicating) successful initiatives. We drew insights from 26 digitally enabled social economy enterprises discovered across the four countries under analysis and complemented our views of the digitalisation of the social economy with a **forward-looking exercise** with the contribution of around 30 European and international experts in the social economy and digital technologies. The experts were invited to reflect upon the trajectories associated with the uptake of digital technologies by and for the social economy and their potential as enablers of Social Economy; implications of ownership and business models and their impact on the economy, on employment and on skills[14].

[14] The forward-looking statements and views of the experts are available in Annex III of the present report.

The study was completed by a policy co-creation workshop held in Brussels on 28 May 2019, with the participation of EC officials, national policymakers, academics and researchers, social entrepreneurs and digital experts. The discussions focused on the role and influence of public policies in shaping a digital environment for social economy and social entrepreneurship, and the outcomes have been synthesized with the scientific and empirical evidence collected during the study to draw the **Conclusions and Recommendations.**

Figure 1: Objectives of the study and means for achievements



To address the aforementioned points and challenges, a multimodal methodological approach has been designed and implemented, which is described hereunder.

1.2 Methodological approach

In the first part of the study we present a literature review on social entrepreneurship and social innovation identifying the role of digital technologies in the transformation of social economy organisations. The information collected was synthesised in the **Conceptual Framework** (cf. Section 2.2.1), which binds the digital aspects with the basic elements of the social economy, and the setting of the **criteria** through which we detected and explored in-depth interesting examples of digitally-enabled social economy initiatives in the four countries object of this study (Greece, Italy, The Netherlands and the UK):

- *the existence of a business model;*
- *the uptake, use and integration of innovative digital technologies either in a supporting or dynamic, pervasive way; and*
- *the geographic location or area of operation of the social economy enterprise, which had to be in one of the four countries under review.*

Overall, the "unit of analysis" has been social innovation initiatives carried out by social entrepreneurs who use digital technologies, and in particular platforms and/or advanced technologies, to produce social and societal impact, and thus could be of interest to scale-up or for replication/diffusion/wider up-take (scale-out to other actors, sectors, locations, regions or countries).

All the 26 initiatives identified – together with a review of all four countries' digital and social landscape – allowed us to explore how digital economy platforms and advanced technologies are changing the environment in which social economy initiatives are launched and operate:

a) **digital social economy platforms**. The focus has been on the identification of benefits and issues associated with the uptake and integration of digital platforms by and for the social economy in the four countries. The research questions we aimed to explore were:

- *How can the future of cooperative platforms foster territorial cohesion and how can collaborative models be envisioned?*
- *How to better frame and regulate platform coops?*
- *How can we diffuse an entrepreneurial model which would simultaneously generate economic value while prioritising employment and good working conditions?*
- *What are the future prospects for the cooperative platform economy?*
- *What are the interactions between social economy actors on the one hand and the digital collaborative economy on the other?*
- *What balance will there be between jobs created as the digital wave flows through our economy and society and what jobs will be displaced?*

b) **advanced technologies use in social economy.** Here our focus was broader than identifying social enterprises using open source software, e-currencies, or other ground-breaking technologies, aiming to explore also how current digital technologies are used in an innovative manner by social enterprises and are diffused and taken-up in the context of social economy in Greece, Italy, Netherlands and the UK. The research questions we aimed to shed light upon were:

- *In what ways can new technologies (such as, distributed ledger technology for instance blockchains), fabrication laboratories (FabLabs) data mining or geolocation, just name some of them, lead to innovations for social economy and social enterprises?*
- *In what way and under what conditions open technology/disruptive technologies can bring about new uses for the social economy?*
- *And conversely, how can these technologies draw inspiration from practices of the social economy?*
- *In what sense and under which conditions can social enterprises exploit open source technologies/disruptive technologies so as to develop new uses and practices?*

The **methodological approach** followed for both aforementioned technological strands involved:

a) an exploration of the **social and digital policy and regulatory context** in each of the four countries (Annex I); and

b) the identification of **interesting digitally enabled social economy initiatives** in the countries considered and the collection and collation of original insights through interviews with operational and ICT managers. These were conducted to obtain in-depth views of results, outcomes and impact as well as success factors, obstacles and lessons learnt associated with the uptake and integration of digital technologies within their operations. Moreover, we probed the interviewees in highlighting future digitalisation plans and strategies in place within their social enterprises.

   In total, we identified and explored in-depth **26 digitally enabled social economy initiatives across the four countries**. These initiatives allowed us to juxtapose the outcomes obtained from the relevant literature with real-life experiences. The outcomes of these discussions are presented in Chapters 3 and 4, while a brief description of each initiative is available in Annex II.

Complementing the current view of the digitalisation of the social economy, a **forward-looking exercise** with the participation of a small but carefully selected sample of European and international social and/or digital experts was conducted, to reflect upon the trends, drivers and 'black swans' (Taleb, 2007) associated with the uptake of digital technologies by and for the social economy and

their potential implications thereof. The exercise aimed at exploring which digital technologies in the next 15 years may act as enablers of social economy, what new social economy business models may emerge, how 'tech-for-society'[15] may evolve, and what could be the impact of digital technologies on the social economy, employment and skills. The statements questioned were organised along the following areas: digital technologies as enablers of Social Economy; ownership and business models; interest in 'tech-for-society'; digital technologies and impact on the economy, on employment and on skills. The forward-looking statements and views of the experts are available in Annex III.

To complete our study, a policy co-creation workshop was held in Brussels on 28 May 2019 among EC officials, national policymakers, academics and researchers, social entrepreneurs and digital experts. The discussion explored the policy angle of the digitalisation of the social economy, and more specifically the **role and influence of public policies in shaping a digital environment for social economy and social entrepreneurship**. Overall, the research questions are:

- *How can public authorities help actors of the social economy and social enterprises to make the most out of the digital revolution?*
- *How can public authorities (European, national, regional and local) promote a better ownership of digital tools by actors of the social economy and social enterprises?*
- *What form(s) should this support take?*
- *How can they assist and accelerate the digital transformation undertaken by these actors?*
- *How can public authorities and social economy actors co-create regulations that have positive impacts on the potential of emerging technologies for addressing societal challenges and how can they minimise the negative externalities of such a process?*
- *What are the lessons learnt from relevant past experiences that should be taken on board with respect to the design and implementation of future policies?*
- *How can we ensure that future trajectories of digitalisation, social economy and social entrepreneurship are taken into consideration in the design of policies?*
- *How can we ensure a common understanding of social economy amongst the EU Member States?*
- *How can a common pace of evolution be achieved across EU?*

1.2.1 Setting the key concepts of the study

Digitisation and **digitalisation** are two closely related terms. They are usually associated and often used interchangeably in a broad range of literature. From a practical perspective, *digitisation* is the process of translating analogue information in digital form and it encompasses the automation of existing processes enabled by the digitisation of information. D*igitalisation*, on the other hand, is more concerned with the implementation of processes or operations by producing/using or leveraging digital technologies; that is the adoption of digital technologies across a wide range of activities[16]. In the context of the present document, the terms *digitisation* and *digitalisation* are used interchangeably and refer to the **use of digital technologies in different aspects of our everyday lives**[17].

There is a lack of unilaterally accepted definitions of social economy, social economy enterprises and social innovation across the EU. Thus, we believe it is important to highlight the working definitions we have adopted in the context of this study from the onset.

[15] i.e. technology that enables social and economic impact
[16] https://www.i-scoop.eu/digitization-digitalization-digital-transformation-disruption/
[17] The process of digital transformation has more wide-reaching implications. It concerns the digitalisation of entire systems of relations including processes and operations and well as organisations and competences across society (the digital/knowledge society). See Hanna (2016)

Social economy. The term 'social economy' first appeared in France at the beginning of the 19th century (EU, 2013). According to the legal and institutional approach proposed by Defourny and Develtere (2009) the "*social economy includes cooperative enterprises, mutual benefit societies and associations".* The social economy also includes insurance corporations, foundations and all the other non-profit organisations which hold principles that correspond to the 'third sector' of the modern economies (Defourny & Develtere, 2009; Moulaert & Ailenei, 2005).

A widely used definition in the EU was proposed by the Social Economy Charter and will be held as working definition in the current study. Therefore, the social economy includes

> "*the set of organisations that do not belong to the public sector, operate democratically with the members having equal rights and duties and practise a particular regime of ownership and distribution of profits, employing the surpluses to expand the organisation and improve its services to its members and to society*" (European Parliament, 2016)[18].

Social Enterprises. The concept of social enterprise has various meanings according to regional declinations and/or dimensions taken into consideration. For example, considering the US approach, the discourse on social enterprise and entrepreneurship is dominated by 'market-based' approaches related to income generation and social change (Dees, 2017; Defourny & Nyssens, 2010). In the EU, the dominant conceptualisation of the social enterprise originates from the cooperative tradition of collective social action (Defourny & Nyssens, 2010; Nyssens, 2007). The OECD/EU (2019) classifies the entrepreneurial continuum according to main sources of revenue and their destination.

The European Commission uses the term 'social enterprise' to cover the following types of business:

- Those for whom the social or societal objective of the common good is the reason for the commercial activity, often in the form of a high level of social innovation;
- Those whose profits are mainly reinvested to achieve this social objective;
- Those where the method of organisation or the ownership system reflects the enterprise's mission, using democratic or participatory principles or focusing on social justice[19].

With respect to their legal form, there is no single legal form across the EU. Many social economy enterprises operate in the form of social cooperatives, some are registered as private companies limited by guarantee, some are mutuals, and the largest majority is constituted of non-profit-distributing organisations like provident societies, associations, voluntary organisations, charities or foundations.

In the remainder of the study, we shall refer to social economy as an *umbrella term* for the traditional social economy including social enterprises. Therefore, we use the terms 'social economy enterprise', 'social economy organisation', or 'social economy actor' to indicate

> "*…an operator in the social economy whose main objective is to have a social impact rather than make a profit for their owners or shareholders. It operates by providing goods and services for the market in an entrepreneurial and innovative fashion and uses its profits primarily to achieve social objectives. It is managed in an open and responsible manner*"[20].

These characteristics, together with the notion of 'social innovation', place particular importance on the social economy dynamic as means to fostering social change, emphasising innovative approaches by social economy organisations to address social needs (Dees & Anderson, 2006; Grenier, 2003).

[18] There are two additional terms that are usually used interchangeably with the term social economy, namely '*solidarity economy'* and the '*third sector'*. The former refers to those economic activities in which social relations of solidarity have priority over individual interest or material profit. It emphasises not only the legal forms, but also their political dimension. The latter refers to organisations other than those publicly owned and private for-profit ones. The third sector brings together cooperatives, associations, mutual societies and foundations; such a third sector is often labelled the 'social economy' in some European countries (Evers & Laville, 2004).

[19] https://ec.europa.eu/growth/sectors/social-economy/enterprises_en

[20] COM(2011) 682 final

Social innovation: The Bureau of European Policy Advisers of the EC defined social innovations as

> *innovations that are social in both their ends and their means – new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations that take place across boundaries between the public sector, the private sector, the third sector and the household* (BEPA, 2010).

The rise of digital technologies and the establishment of a hyperconnected society significantly affect social innovation as well. **Digital social innovation** is a new and emerging innovation enabled by the Internet and digital technologies. It is leading to new models of collaborative production and content sharing[21].

Finally, we wish to clarify what is meant by **impact** in the context of the present study. The concept of impact has been honed within the evaluation literature over the last few decades[22].

> *Impact represents the wider and longer-term effects for the target individual, organisation, the economy and society to which interventions or actions contribute (together with other unrelated contextual factors).*

In other words, we consider **the mission and vision of the social economy enterprise as the motives for operating.** They are enacted in the domains of 1) Work Integration; 2) Personal Social Services; 3) Local Development of Disadvantaged Areas; or 4) Other as identified by the Social Business Initiative (SBI)[23] or to face societal challenges (i.e. the Sustainable Development Goals). Outputs and outcomes (i.e. the products, services, contents and relations produced and exchanged) are the means to achieve social and economic change (impact)[24].

1.3 The European digital policy context

The phenomenon of digitalisation is causing a tremendous transformation at the socioeconomic level by changing the nature of innovation, product development and services provision as well as interactions between producers and consumers. The intensity, magnitude, speed and transformational power of the digital economy puts pressure on national governments as well as the EU to design innovative policies fit for the digital age.

To this end, in May 2015 the European Commission presented its **Digital Single Market** (DSM) strategy, which strives towards providing individuals and businesses with the best possible access to the online world. The Digital Single Market recognises that the global economy is rapidly becoming digital, and it is built on three pillars: Access to digital goods and services across Europe; Environment, i.e. the conditions necessary for digital networks and innovative services to flourish; and Economy & Society. Social economy can make use of the Digital Single Market, which intends to ensure that both citizens and businesses can take full advantage of the opportunities that digitalisation can offer and, to this end, brings together social partners together with education providers, policymakers and other relevant stakeholders.

[21] See Misuraca and Pasi (2019) for a discussion on the approach of the EU on social innovation and ICT-enabled social innovation in particular.
[22] A useful glossary of the main concepts and practices of evaluation may be found in EVALSED: The resource for the evaluation of Socio-Economic Development (2013) https://ec.europa.eu/regional_policy/sources/docgener/evaluation/guide/guide_evalsed.pdf
[23] https://ec.europa.eu/growth/sectors/social-economy/enterprises_en
[24] This means that, in the case of a social economy enterprise whose mission and vision are to provide relief for social exclusion, the output would be the products, services and relations which are made available to the target population, the outcome would be the uptake of these, whilst the impact consists in the extent that social exclusion has been relieved within the target population in the longer term.

Completing the Digital Single Market could contribute €415 billion per year to the EU's economy, create new jobs and help sectors such as industry to fully benefit from digital opportunities.[25] Thus, in order for Europe to unlock its digital potential, its countries need to join forces under a common strategy that can take digitisation of the EU's economy forward. With this objective in mind, the European Commission launched the Digitising European Industry strategy (DEI), aiming to ensure that every business in Europe – whichever the sector, wherever the location, whatever the size – can draw the full benefits from digital innovation. The five pillars of DEI involve:

1. **A European platform of national initiatives on digitising industry[26]:** The platform brings together EU Member States' national digital industrial growth strategies and initiatives and how they can be linked to national innovation and industrial policies. To date, a critical mass of initiatives and investments have been developed by a significant number of Member States[27]. These bring on board the results of the Digital Transformation Monitor[28] and the Digital Economy and Society Index[29].
2. **Digital Innovation Hubs (DIHs)[30]:** DIHs are regional multi-partner co-operations (*among RTOs, universities, industry associations, incubator/accelerators, regional development agencies and even governments*) that act as one-stop-shops where companies – and particularly SMEs, start-ups and mid-caps[31] – can get help as well as business and financing support to improve their business, production processes, products and services by means of digital technology. Currently, over 200 DIHs are fully operational across Europe.
3. **Strengthening leadership through partnerships and industrial platforms:** Public-Private Partnerships (PPPs) aiming to develop key digital technologies, such as robotics, smart sensors, big data and mobile communications, so as to provide the building blocks of the digital future are supported together with partnerships and EU-wide collaborations that foster digital innovation in specific sectors.
4. **A regulatory framework fit for the digital age:** A digital-friendly regulatory framework is important for the EU's industry and economy to strive. To date, the European Commission has proposed several measures in key fields for industry, including cybersecurity and free flow of non-personal data.[32] With respect to digital platforms, the European Commission has started addressing the regulatory challenges associated with online platforms and the businesses that use them in several communications; yet, the quest remains on finding the right balance between market regulation and innovation (Wiewiórowska-Domagalska, 2017).
5. **Preparing Europeans for the digital future:** Adapting the workforce via reskilling and upskilling requires a change of the education and learning systems. The *Digital Skill and Jobs Coalition*[33] and the *Digital Opportunity Scheme*[34] are aiming to bridge the gap, while the *New Skills Agenda for Europe*[35] is set to mobilise Member States and stakeholders to co-create a strategy for improving the visibility, quality and relevance of skills for the labour market, as

[25] https://ec.europa.eu/futurium/en/system/files/ged/15_11_2017_digitising_european_industry_brochure_ec_final_web3.pdf
[26] https://ec.europa.eu/futurium/en/implementing-digitising-european-industry-actions/national-initiatives-digitising-industry [last accessed July 2019]
[27] The 14 Member States that have developed initiatives and investments in this policy area, and have been recorded on the platform, are: AT, BE, CZ, DE, ES, FR, HU, IT, LT, LU, NL, PL, PT, SE.
[28] https://ec.europa.eu/growth/tools-databases/dem/monitor/content/welcome [last accessed July 2019]
[29] https://ec.europa.eu/digital-single-market/en/desi
[30] https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs
[31] Mid-caps are companies of market value between $2 and $10 billion – source: https://www.investopedia.com/terms/m/midcapstock.asp
[32] The Regulation, applicable as of 28 May 2019, aims at removing obstacles to the free movement of non-personal data across Member States and IT systems in Europe.
[33] https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition
[34] https://ec.europa.eu/digital-single-market/en/news/commission-announces-pilot-project-boost-digital-skills-through-internships
[35] COM/2016/0381 final

well as improve information and understanding of trends and patterns in demands for (sectoral) skills and jobs (skills intelligence).

Complementing the DSM strategy, the **European Strategy for Key Enabling Technologies (KETs)**[36] aims to increase the exploitation of KETs in the EU and to reverse the decline in manufacturing to stimulate growth and jobs. Among the activities undertaken, ICT and digital technologies are the *fil rouge*. As anticipated, the social economy figures only marginally in the strategy (European Commission, 2018b), mainly as a partner in this endeavour[37].

In the context of the new European Commission, President Ursula von der Leyen in her address to the European Parliament in July 2019, stated that digitalisation is at the heart of Europe's socioeconomic strategy (Ursula von der Leyen, 2019). The President raised the issues of fostering employment, social fairness and welfare, tackling social exclusion and poverty, promoting equality through social security, education and infrastructure and encouraging sustainability and health. In this forward-looking strategy, digital technologies and the emerging European digital governance framework are strategic to the achievement of these challenges within safe and ethical boundaries. Advanced digital technologies such as Artificial Intelligence (AI), Internet of Things (IoT) and the 5G network are seen as enablers of digital sovereignty and a platform for the next generation of hyperscalers.

Overall, the potential for digital technologies to engender innovative social and societal impact solutions, and the consequent role of social economy enterprises in driving this new innovative venture is critical and within reach. Social economy actors (can) use digital technologies to keep rendering the economy more democratic, but also to apply it in a more efficient way so that they become the protagonists of an accessible and inclusive "digital social economy." Thus, the underlying question is:

> *"What is the role of the stakeholders and the policymakers in encouraging integration of emerging technologies in the social economy, so as to achieve enhanced social and societal impact and long-term economic viability of social economy enterprises?"*

To this end, the Commission has been providing space for the social economy to partake a strategic approach and benefit from digital technologies, so as to leverage the economic and social changes necessary to increase the impact of the European Social Model across all Member States[38]. This effort must be sustained and developed in the forthcoming years.

1.4 Social and digital economies status in the EU: an exploration of the four countries of the study

In the remainder of the chapter, we shall provide an overview of the four countries explored, highlighting some background information on their national social economy, the impact of the social economy on the national economy, their ongoing digitisation process as well as the existing digital policy and funding instruments that promote the digitalisation of processes. The countries-object of our analysis include Greece, Italy, The Netherlands and the UK.

From a social economy perspective, apart from national differences in definition and legal frameworks, there are great differences in the sizes of the various national social economies, levels of development and regional specialisations. Nonetheless, with some rare exceptions, activities are generally

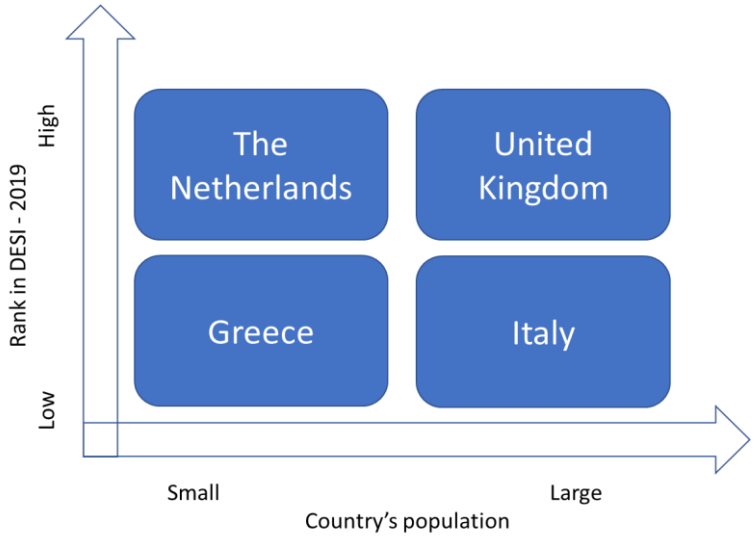
[36] https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/european-strategy_en

[37] The European Commission is also involved in Distributed Ledger Technologies (DLTs) and Blockchain. The EU Blockchain and DLTs Observatory and Forum is active since 2018 and has developed a map of activities (https://www.eublockchainforum.eu/initiative-map). Also in this case, the social economy figures only in a marginal role with very few exceptions (i.e. the Hellenic Blockchain Hub: http://blockchain.org.gr. Moreover, in April 2018, the EC created the European Blockchain Partnership involving EU Member States and EEA Countries committing the signatories to engage in blockchain development for the benefit of citizens, society and the economy.

[38] The presence of social partners and the social economy organisations representative in The Digital Skills and Jobs Coalition is a signal of this policy orientation.

organised by small and medium sized organisations that only occasionally reach larger size. From a digital perspective, we may classify these countries according to their sizes and their relative digitisation process measured through the Digital Economy and Social Index (DESI 2019), graphically depicted in the figure below:

Figure 2: Representation of the four countries of the study regarding their digitalisation process and size of country



1.4.1 Greece

The Greek social economy landscape

The Greek social economy grew significantly over the past decade. It has appeared and continues to operate in various forms, including formal and informal entities and structures with various underlying motivations. Due to this variety, social economy organisations in Greece are not easily defined in definitive terms, but there is consensus on a broad range of principles, including the undertaking of economic and/or entrepreneurial activities; a clear social purpose; independence and democratic governance; collective action; and the reinvestment of profits in their social purpose and/or for the welfare of employees, instead of shareholders (Temple, Varvarousis, Galanos, Tsitsirigos, & Bekridaki, 2017).

The financial crisis and the ongoing economic recession have been widely recognised as some of the main key factors for the recent rapid expansion of the social economy in Greece, with a growing part of the population facing employment insecurity and declining access to social welfare and provisioning through the established channels of the market and the state. The fierce fiscal austerity and dismantling of social security structures have sparked the establishment of social economy enterprises alternatives to cover the growing social needs in social welfare unmet by the state.

Amidst a growing democratic disenchantment and institutional disconnect, the social economy came to also serve the needs associated with meaningful political action, representation and new forms of governance and socio-economic transformation, including the commons, degrowth and alternative economic networks (Gritzas & Kavoulakos, 2016). From anti-middleman food distribution networks (Rakopoulos, 2015), to the 2011 Citizens' Assemblies (Vathakou, 2015), these initiatives have laid the grounds for the social economy to aim beyond the amelioration of the effects of the crisis and directly challenge the established economic system by promoting radical post-capitalist and anti-capitalist narratives and practices (Kalogeraki, Papadaki, & Pera Ros, 2018). Furthermore, they strive for alternative entrepreneurial models and mentalities with embedded social and societal values.

Despite its great significance in terms of social provision and political mobilisation, the economic impact of the Greek social economy is relatively small compared to other EU experiences. The very task of estimating the economic impact of the social economy in Greece can be very challenging due

to the problems of definitions and the diversity of the initiatives. According to the British Council report on the Greek social economy, the social economy includes cooperatives, mutuals, social enterprises, not-for-profit institutions, social and solidarity economy organisations, associations and foundations (Temple et al., 2017).

The latest available data speak for a contribution of €2.5 billion by social economy organisations, accounting for 1.4% of GDP, where the EU average ranges from 5 to 10%. According to the MoL Special Secretariat Annual Report (2018), the total number of social enterprises on the official registry until February 2018 was 1,138[39]. Geographically, social economy organisations are still largely concentrated in Attica (44% of the total). In terms of employment, over 1000 people were working in active social economy organisations in 2016, with over 380 of them belonging to vulnerable social groups.[40]

ICT and digital technologies in the context of the Greek (social) economy

The Greek government considers digital technologies as a critical factor in restarting and developing the national economy by boosting employment, achieving more effective and efficient public administration, improving the quality of life for citizens and strengthening social cohesion. In December 2016 the **Greek National Digital Strategy 2016-2021** was launched, which constitutes the framework and roadmap of the country's digital transformation. The objectives of the strategy are summarised hereunder:

- To achieve high availability and penetration of new generation broadband services, as a prerequisite for creating prospects for economic growth, employment, outward orientation and innovation.
- To support essential public administration reform actions, both in the area of providing effective and integrated services to citizens and businesses.
- To support the digital transformation of all Greek enterprises across all economy sectors, by strengthening both the supply (the ICT industry) and demand (companies, including for-profit and third sector ones).
- To establish ICT as an internationally competitive sector of the national economy, by recruiting and developing the country's human resources, by providing real support to start-ups and innovative ICT entrepreneurship and by enhancing the digital skills of the population, especially at primary and secondary level.

Overall, the digitalisation strategy does not include explicit directions towards the social economy or specific social objectives. In the absence of an official evaluation of the country's digital strategy looking into its contribution to and from the social economy, elements such as digital inclusion, digital social innovation are only vaguely implied in official documents.

The "Greek National Coalition on Digital Skills and Jobs" was launched in November 2017 under the leadership of the Ministry for Administrative Reconstruction with the partnership of some major national stakeholders, and includes also social economy representatives such as Social Innovation and Revive Greece, two non-profit endeavours with a mission to eliminate the digital skills gap – especially for young people – in Greece. One of the aims of this coalition is to raise **awareness about ICT careers**, enhance **ICT enabled entrepreneurship**; and end digital divide by constructing an **e-inclusive society**.

The coalition aims to develop a functional ecosystem, forging synergies among public and private sector agencies, ICT enterprises, universities, research institutions and other entities and implementing a series of actions towards improving general population's digital illiteracy and

[39] The number of Social Solidarity Economy organisations which submitted an annual report for the year 2017 is 374.

[40] From the profit/loss ratio and taking into account the average labour costs, it can be inferred that a significant portion of the people employed by SSE organisations are working in non-formal forms of employment, which speaks for the still nascent phase of development of the SSE sector and the need for improvement of the sustainability conditions.

upgrading citizens' skills. Overall, it focuses its effort to leverage existing knowledge, strategies, best practices and policies from across Europe for the promotion of digital skills and e-Leadership; build digital transformation capacity in the public sector; offer state-of-the-art career counselling and mentoring; raise awareness about ICT careers; enhance ICT enabled entrepreneurship; encourage a more balanced representation of gender in the digital economy; and end the digital divide and build an e-inclusive society. In April 2019 was launched the "National Action Plan 2019 for the promotion of innovation and digital skills"[41]. The plan was based upon the 2018 Greek DESI report, the Women Digital Scoreboard for 2018, and the 2017 Digital Competence Framework.

In terms of progress towards the National Digital Strategy, the latest national monitoring of Greece's digital progress (Greek Ministry of Digital Policy, 2018) reported progress in developing next generation national connectivity infrastructures, in building digital trust and security, and in reviewing digital Public Services provision.

According to the Hellenic Statistical Authority's annual survey on the use of ICT and e-commerce in Greek enterprises (Greek Statistical Authority, 2018)[42], the vast majority of enterprises (86.8%) use some form of a computer device (e.g. personal and portable computers, personal digital assistants and smartphones), only one in ten (11.3%) receive orders via a website or an application or EDI-type messages[43], and only a handful (546 enterprises) using advanced digital technologies such as 3D printers or robotics (830 enterprises). Interestingly, three out of five enterprises (58.9%) use big data analysis and two out of five enterprises (44.7%) generate geolocation data.

According to the latest Digital Economy and Society Index (DESI) report of 2019, Greece ranks 26th out of EU28. Over the last year though, Greece progressed slightly more than the EU average increase, and the improvement of its score is due to an improved performance in some of the DESI dimensions measured: the percentage of ICT specialists in relation to the country's total employment improved for the third consecutive year, and the number of ICT graduates increased for the second year running. The country also improved the supply side of digital public services. Albeit its improvements, the country still lags behind other European countries falling into the cluster of low-performance countries.

The improvements accomplished in the fields of infrastructure and digital public services are providing a good starting point for social enterprises to uptake digital technologies, as means to serve their social missions and visions. Nevertheless, the lack of digitally literate population – as employees as well as in terms of overall population – creates frictions and obstacles that need to be overcome. To this end, it should be noted that a Training Voucher programme is currently being implemented, which aims at providing accredited training on ICT and Social Economy and Entrepreneurship for unemployed people. Approximately 3.700 people are expected to benefit from this scheme. Moreover, in March 2017, the Ministry of Digital Policy and the Hellenic Open University signed an MoU in order to set up activities to promote the acquirement of basic digital skills by users, and the Hellenic Association of Information Technology & Communications is also implementing a programme to train and certify young unemployed in the ICT sector.

Digital policy and funding instruments

To date, there are digital policy initiatives and financial instruments that support Greek enterprises, including social enterprises, to digitise their processes as well as upgrade their existing ones. **In terms of public intervention,** the Ministry of Economy and Development has adopted the **Fund of Funds** approach including sub-funds, one for each of the pillars of the economy (including ICT), aimed at financing Greek enterprises, including social ones in various development phases of their digital transformation. The European Investment Fund (EIF) is the operator of the above fund, while

[41] Available at www.nationalcoalition.gov.gr/wp-content/uploads/2019/02/NC_Action_Plan_2019_en.pdf
[42] In 2018, around 30.000 enterprises with more than 10 employees were interviewed across the following sectors: (NACE Rev.2) 10-63, 68-82 and 95.1.
[43] EDI (Electronic Data Interchange) is the transfer of data from one computer system to another by standardized message formatting, without the need for human intervention. https://searchdatacenter.techtarget.com/definition/EDI

the evaluation of the participations is made by specialised private investment funds, which also participate in financing.

Moreover, the Ministries of Digital Policy, Telecommunications and Media as well as Economy and Development plan to inaugurate a new initiative, the **Greek Industry 4.0**, with a budget of approximately €20 million. This initiative is of high importance as the introduction of automation and structural components of the 4th Industrial Revolution, as well as the integration of digital technologies such as the Internet of Things (IoT), cloud computing, smart grids, autonomous systems (vehicles or robotic systems) is very limited in the Greek economy. Of course, social enterprises will be eligible to participate and benefit from this initiative.

Investing in knowledge to assist **the Digital Transformation process, SEV (The Hellenic Federation of Enterprises)** offers educational services to Greek enterprises. The objective is to make Greek enterprises digitally competitive and enable immediate adoption of advanced digital practices across their range of activities. Businesses from various industries, including social economy ones, have been already trained to this end.

There are also currently five (5) Digital Innovation Hubs in Greece, most of which located in the capital city of Greece, Athens that support, amongst others, social enterprises with their digital transformation. These Digital Innovation Hubs are ''one stop stores'', where social enterprises are being helped to **improve their business models**, **production lines and products/services through digital technologies**. Moreover, these hubs provide Greek social enterprises with access to digital technologies, tools and know-how, infrastructures for testing new technologies, educational activities for the development of digital skills and consulting services for exploring funding opportunities to start or update their digital processes.

On top of those, two funding opportunities were available for the Greek enterprises to digitise their activities as well as upgrade their existing digital infrastructures. Specifically, the Ministry of Economy and Development announced in June 2018 two initiatives, "**Digital Step**" and "**Digital Jump**", with a total budget of €100 million (€50 million each). The initiatives aimed at **digital upgrading and digital transforming Greek enterprises of all sectors**. Both actions were funded by the Partnership Agreement for the Development Framework 2014-2020, thus **social enterprises were fully eligible to apply and receive funding from these actions**.

Last but not least, the action of the General Secretariat for Research and Technology (GSRT), "**Research-Create-Innovate**", provides public expenditure of around €52 million for the **adoption of digital technologies by Greek enterprises**. The action is funded by the Operational Programme Competitiveness, Entrepreneurship and Innovation 2014-2020 (EPAnEK) and aims to support innovation and technological development for the Greek enterprises. Social enterprises that are registered as such in the Greek business registry can participate in this action and receive funding to enhance their digital capacity.

1.4.2 Italy

The Italian social economy landscape

Social entrepreneurship in Italy is steeped in the history of the Italian cooperative movement, which became popular in the second half of the 19th century. The development of the modern social economy ecosystem is closely linked to the evolution of Italy's welfare system and spans nearly forty years, encompassing diverse trends across various sectors of economic activities. One of these trends is seeing the establishment of different organisational types of social enterprises. In fact, in Italy can be found several types of organisations such as social cooperatives, associations and foundations, mutual aid societies, joint stock and limited liability companies, and, of course, traditional cooperatives.

The social economy in the country is characterised by a predominant social cooperation approach, revealing a culture that leverages on the public-private welfare combining the non-profit corporate culture with government funded initiatives. The law L.381/1991 institutionalised the grass-root

phenomenon in the social economy. The implementation of this law aimed at boosting the quality of social services offered by social enterprises and stimulating both the establishment of collaborative relationships and the widespread diffusion and growth of social economy enterprises.

Interest in the social economy phenomenon, its diffusion and strengthening in the economy led to "new" funding avenues and enabled stakeholders such as citizens associations, banks, investors, territorial agencies and other non-profit organisations to form new collaborative ventures between public, private and not-for-profit actors. The collaborations between non-profit market-oriented organisation and for-profit companies operating in the social area are giving way to hybrid models of social entrepreneurship oriented towards social impact. These are mainly shareholder-based companies managed by social co-operations; the majority of these new social enterprises tend to rely heavily on ICTs to serve their social remits.

According to the latest official[44] national statistics, social enterprises in Italy amount to some 93,000 organisations. Social cooperative ("*imprese sociali"*) is the most common model of social enterprise in Italy. Social cooperatives alone employ over 65.9% of the total number of Italian social economy employees[45]. In Italy, the impact of social enterprises and of the social economy as a whole is significant at a structural level. Social entrepreneurship introduces new concepts relating to resources and exchange, as well as highlighting the role of human capital. These enabled the creation of new business models across the traditional social sectors including welfare-oriented activities and workplace policies in sectors as diverse as cultural production, tourism, agriculture, and energy.

ICT and digital technologies in the context of the Italian (social) economy

The Italian government acknowledges digital technologies as important not just for their value to the Italian economy, but also for their potential to change the overall country's socioeconomic context. By doing so, government committees are seeking to exploit this potential by enabling Italian enterprises to start and grow a digital business, test new digital technologies, or undertake advanced research in new technology areas. Along these lines, in March 2015 the Italian government adopted the national **"Digital Agenda Strategy 2014-2020".** The "Digital Agenda Strategy 2014-2020" has been designed to stimulate the development of digital infrastructures, encourage the widespread use of digital technologies, services and processes, and boost competitiveness, productivity and efficiency while at the same time support economic growth and employment in the country. The social economy is also part of this strategy.

The strategy identifies three main targets to support the country's digital transformation towards a more efficient economy and improve the quality of life of citizens, workers and industries, namely:

- the progressive digitalisation of all the public services in user-centred perspective;
- the development and diffusion of digital skills and competences both in the industrial and in the civil society domains; and
- the overall coordination of planning and public investments in digital innovation and ICT at large.

During the last two years, the "Digital Agenda Strategy 2014-2020" has been enriched according to emerging needs and newest trends and requirements of the country's digital landscape. In detail, two major initiatives have been established to support the Italian digital transformation, that is:

[44] http://www.impresasociale.net/osservatorio/impresa_sociale_40_-_osservatorio_isnet_2018.php

[45] 1,267,603 jobs out of 1,923,745 in 2015, based on: Istat (agriculture census 2010, census not profit institutions 2011, permanent industry and services census 2014); Association of cooperative banks; Federazione italiana delle banche di credito cooperative - casse rurale e artigiane; Ministry of Agricultural Food and Forestry Policies (Osservatorio della cooperazione Agricola 2016); Research departments of Agci, Confcooperative, Legacoop. Source "*Recent Evolutions of Social Economy in the European Union – Study – 2017*". CIRIEC - International Center for Research on the Public, Social and Cooperative Economy.

- The Triennial Plan[46] for digitalisation of the Public Administration (2019-2021). The plan[47] defines the digital growth of public administration by leveraging tools and models based on *open innovation, innovation procurement* and *smart landscape* methods.
- The establishment of a task force[48] on Artificial Intelligence. Its scope is to define ways to modernise processes, services and products of the Public Administration with the use of AI-based technologies.

The latest report on "ICT in Italy" (Il Digitale in Italia 2018)[49] highlights that by 2018 there has been significant growth in the diffusion of digital technologies in Italy even though the country is lagging behind compared to the most EU countries. The gap is also confirmed by the DESI[50] index which ranks Italy in the 24th place, thus in the "low performing" countries in terms of ICT and digital technologies diffusion. Nevertheless, there are positive indications that the digitisation of the country is strengthened. This view is supported by DESI 2019 report for Italy, which reveals the fact that the country is performing well in the Connectivity and Online (digital) public services. Fast broadband coverage and its take-up are progressing well as well as open data that are readily available: both aspects contribute to speed-up the integration of digital technologies into industrial and business processes.

Regarding the **social economy and social economy enterprises in Italy**, a recent survey[51] on the digital transformation of the whole country's social economy highlights the fact that digital technologies are broadly diffused amongst Italian social economy enterprises and are often included in all of their activities (23%), but still not deployed with a strategic purpose (34%). Nevertheless, there is still a small portion of social economy enterprises that do not deploy any digital technologies (one in eight social enterprises).

Regarding the impact of digital technologies in the social economy, a recent survey from ISNET presented the views of 500 Italian social enterprises (400 Social Cooperatives, 100 Social Enterprises ex-lege) on the possible impact of the adoption of a specific digital technology in their organisation[52]. In this context, the social enterprises (*ex-lege)* reveal a bigger interest in using digital technologies, due to their business-oriented characteristics which drive their business practices towards economic sustainability. In fact, the technologies that might achieve the greatest positive effects on the activities involve (i) The digitisation of their internal processes; (ii) Autonomous Vehicles; (iii) The sharing economy; (iv) Blockchain and (v) 3D printing. On the other hand, there are aspects requiring further study, information or awareness, and most specifically those regarding advanced robotics, new materials (alloys and compounds - lighter, more effective, smaller) and sensors.

To conclude, Italian social economy organisations, including social enterprises, are currently asking for practical and legal support to help them upskill the adoption of digital technologies. This can help them to overcome some of the many barriers that appear along the digitalisation process. To this end, social economy enterprises are asking to include skills and technologies as objectives of the incentives provided by the central administrations and by the government.

Digital policy and funding instruments

The Italian Government has already commenced a number of actions to apply its "Digital Agenda Strategy 2014-2020". First, the Italian Ministry for Economic Growth and Development (MISE) has funded[53] 8 *Competence Centres* supporting the development of **Industry 4.0.** These centres are

[46] https://www.agid.gov.it/sites/default/files/repository_files/piano_triennale_per_linformatica_nella_pubblica_amministrazione_2019_-_2021_allegati20190327.pdf
[47] https://www.agid.gov.it/it/agenzia/piano-triennale
[48] https://ia.italia.it/
[49] "Il Digitale in Italia 2018: Mercati, Dinamiche, Policy". http://ildigitaleinitalia.it/ by Confindustria Digitale
[50] Digital Economy and Society Index 2019, Country Report Italy
[51] Source: "Terzo settore e trasformazione digitale". https://italianonprofit.it/
[52] Source: ISNET report 2018. http://www.impresasociale.net/osservatorio.php
[53] https://www.mise.gov.it/index.php/it/198-notizie-stampa/2038155-centri-di-competenza-pubblicata-la-graduatoria

based on a public-private-partnership with the scope to drive enterprises and their management towards the implementation of innovation projects and digitalisation of their activities. A network of 41 Digital Innovation Hubs, in tight cooperation with the competence centres, constitute the actual gateways for SMEs (incl. social economy enterprises) for accessing the supporting services.

Furthermore, the operational phase of the Triennial Plan for Digitalisation[54] has been kick started with the **Framework Agreement for Growth and Digital Citizenship**[55], signed on the 15th February 2018. This agreement enables the Italian Regions to act as local coordinators for the digital transformation of services delivered to citizens and enterprises. To date, the agreement has been endorsed by 5 Regions: Abruzzo, Lazio, Marche, Puglia and Sardegna.

Last but not least, the **National Coalition for Digital Skills**[56] has been established to foster the digital literacy at large, to create awareness about new digital professions and to support small enterprises approaching digital transformation challenges. At the time of writing, the Coalition gathers 151 members and a total of 104 projects funded.

In terms of financing, there are numerous funding instruments that support Italian enterprises to adopt digital technologies and/or upgrade their existing digital infrastructure. In this context, the main instrument for funding the digital transformation in Italy is the "*Voucher per la Digitalizzazione*[57]". Some other funding opportunities include:

- **Iperammortamento.** For the acquisition of goods related to industry4.0 and related investment (software, systems, system integration, platforms, applications), it's possible to deploy the iper-depreciation[58] (*iperammortamento*). The eligible costs, up to € 20 Million, shall be sustained by the end of 2020.
- **Sabatini ter.** This funding instrument[59] is specifically targeted to SMEs (including social ones) and it relates to direct contribution released by the Ministry of Economic Development (MISE) against an existing bank loan. The eligible costs shall relate to equipment, plants, hardware, software and digital technologies, and must amount to at least € 20.000 without exceeding the € 2 Million.
- **Bonus formazione 4.0**. This is a *Bonus*[60] *for Training in 4.0*, targeted at increasing workforce skills. SMEs can access up to € 300.000 of 50% of co-funding for costs occurred from the 2019.
- **Voucher innovation manager**. This instrument[61] allows micro-, small- and medium enterprises to acquire professional services by a high-level Innovation Manager. These services must be specifically targeted at supporting the technological and digital transformation processes, as well as the access to financial markets and assets. The allowed 50% co-financing cannot exceed the € 40.000 ceiling.

1.4.3 The Netherlands

The Dutch social economy landscape

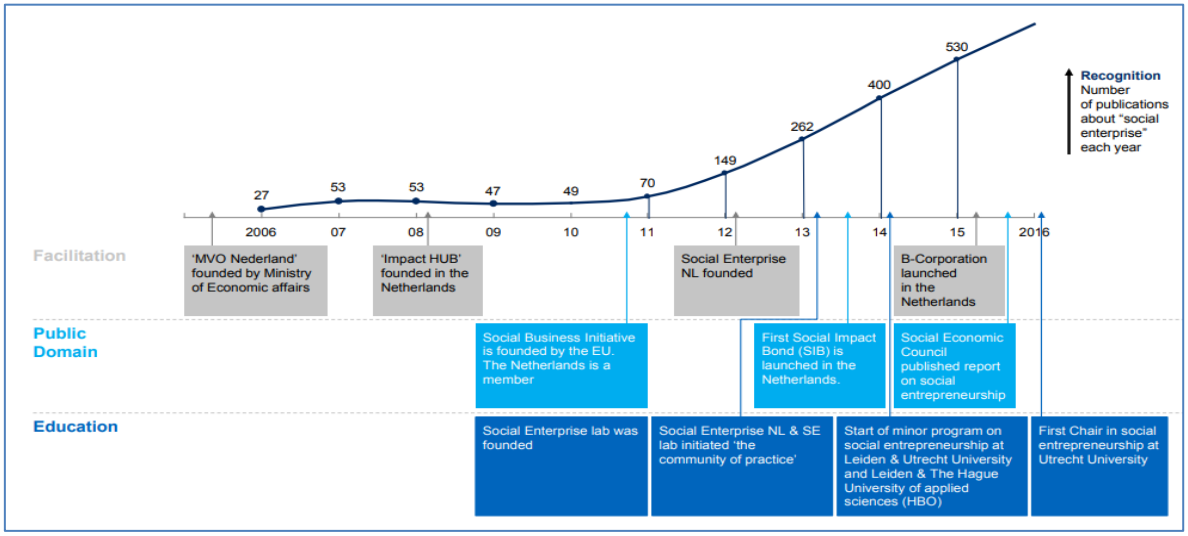
In the European Commission (2019) country report on the Dutch ecosystem of social enterprises Bosma identifies fertile ground for social enterprises and social economy, and states that: "*Dutch inhabitants have always been involved in socially orientated initiatives to large extent, including civic engagement and voluntary activities*". Although cooperatives have been prevalent from the 19th century, and the concept of social entrepreneur has only been introduced around 2010, the discussion

[54] https://www.agid.gov.it/sites/default/files/repository_files/piano_triennale_per_linformatica_nella_pubblica_amministrazione_2019_-_2021_allegati20190327.pdf
[55] https://www.agid.gov.it/it/accordi-territoriali
[56] http://competenzedigitali.agid.gov.it/content/coalizione
[57] https://www.mise.gov.it/index.php/it/incentivi/impresa/voucher-digitalizzazione
[58] https://www.mise.gov.it/index.php/it/incentivi/impresa/iper-e-super-ammortamento
[59] https://www.mise.gov.it/index.php/it/incentivi/impresa/beni-strumentali-nuova-sabatini
[60] https://www.mise.gov.it/index.php/it/incentivi/impresa/credito-d-imposta-formazione
[61] https://www.voucherinnovationmanager.it/

about the intersection between public value and private wealth (and the continuum between charity and "for-profit-only") goes back to the 16th and 17th century.

This historical background can explain certain characteristics, such as the high share of volunteers and charity donations, the size of the social economy, and the attention of the business sector to Social Corporate Responsibility in the Netherlands. The positive perception on combining 'revenues/profit' and 'social impact' in the form of social enterprises could partly explain why social enterprises are a more frequent form of organisation within the Third sector as compared to cooperate forms, and why a relatively high share of social enterprises have a legal 'for-profit' entity of 'BV' (PwC, 2018; Social Enterprise NL, 2016). The term 'social economy' remains rarely used in the Netherlands. The term 'social enterprise' is increasingly used in the Netherlands during the last decade.

Figure 3: The development of Dutch social enterprise infrastructure



Source: McKinsey (2016)

The term 'social economy' remains rarely used in the Netherlands. The term 'social enterprise' is increasingly used in the Netherlands during the last decade.

Figure 3 describes how social enterprises have developed as topic and infrastructure. In the past the term 'societal undertaking' (as a translation of 'maatschappelijk ondernemen' in Dutch) was used and later 'societal responsible undertaking' ('maatschappelijk verantwoord ondernemen' in Dutch). After 2011 the attention and supporting activities from government and education (courses on social entrepreneurship) has grown.

Social Enterprise NL emphasises the importance of "*Impact first*" when it comes to social enterprise. They state that a social enterprise has a social mission, and the impact is obviously wider than looking for an impact on growth and GDP. Nonetheless, over the last five years, the social enterprise sector grew by 2,000-2,500 enterprises to 5,000-6,000, expanding the sector by about 70% and representing ~1% of the total increase in the number of all companies since 2010. The collective social business revenues of the Netherlands grew by 75% to €3.5 billion in 2015 and have contributed 3% to the growth of the GDP between 2010 and 2015 (McKinsey, 2016).

To be sustainable in the long run, to scale up and to remain in business, social enterprises need to be profitable. Profitability as well as access to capital seem to be improving over time for social enterprises (Social Enterprise NL, 2018). Overall, about 58% of Dutch social enterprises either break even (20%) or make a surplus.

Further, the Netherlands has become a European epicentre for social entrepreneurship and impact investing. In the last 5 years, the social economy has grown rapidly and boosted its impact on important themes such as *circularity, poverty reduction, education and inclusivity*[62].

[62] http://www.socialimpact-mission.nl/

Technology enabled social enterprises can and do make use of the existing national funding instruments for research and innovation, which are open to social enterprises. Examples listed by Bosma in (EC, 2019):

- Dutch Good Growth Fund,
- Guarantee Corporate Financing Energy Transition Financing Facility,
- Innovation Credit (Innovatiekrediet),
- Investment subsidy renewable energy,
- SBIR (Small Business Innovation Research),
- Tax scheme for research and development.

The OECD/EU, 2019 adds as a strong element in the Dutch funding instruments for the social economy the development of payment by outcomes models by municipal and national government authorities using social impact bonds (SIB). The report confirms the findings of the McKinsey report from 2016 that the Dutch impact investing sector is strong, diverse and growing, referring to:

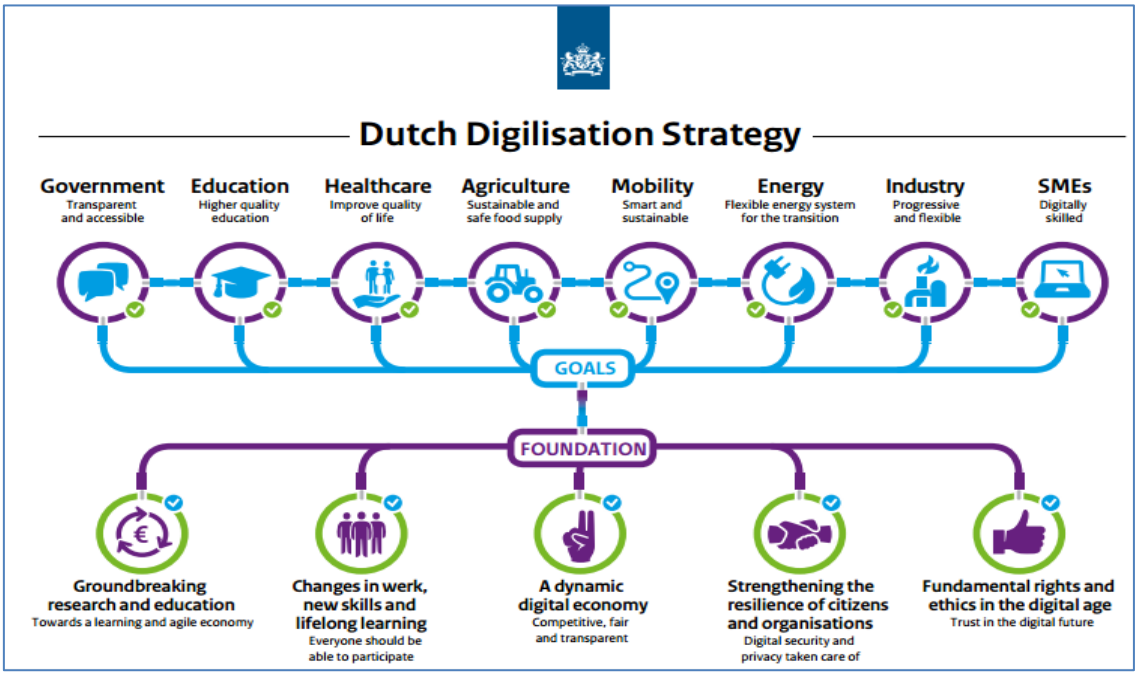
- Impact oriented angel investor networks;
- More than ten dedicated impact investing funds;
- Several crowdfunding platforms supporting impact projects;
- About one hundred foundations funding social entrepreneurship projects; and
- Established companies through their CSR programmes.

ICT and digital technologies in the context of the Dutch (social) economy

In the Digital Economy and Society Index the Netherlands ranks 4th among the 28 Member States. The country profile of The Netherlands (European Commission, 2018a) shows that it 'progressed at a faster pace than the EU average, outperforming the other Member States in all five DESI dimensions while improving its ranking in two of them compared to the previous year'. The Netherlands is the European leader in connectivity with a high-quality, ubiquitous digital infrastructure. Almost all Dutch individuals (94%) make extensive use of internet services, especially for banking (93%) and shopping (82%). Integration of Digital Technology (rank 6) has increased over the last year in most DESI categories. In Digital Public Services (rank 6), the Netherlands improved its scores.

In the Dutch Digitalisation Strategy document published in 2018 by the Ministry of Economic affairs and Climate policy, there is no explicit mention of social enterprise or social economy. However, given the goals and especially foundations (Figure below) it is clear that there is an opportunity for social enterprises to play a major role in terms of implementation of the digitalisation strategy and in generating actual impact in the Netherlands. Especially the founding principle of 'Strengthening the resilience of citizens and organisations', but also in terms of 'ethics in the digital age', fairness, inclusive, transparency and privacy, the principles fit with those emphasized by many social enterprises.

Figure 4: Dutch Digitalisation Strategy



Source: Dutch Digitalisation Strategy: Getting the Netherlands ready for the digital future (2018)

The Dutch Digitalisation Strategy specifically addresses many social impact and social economy issues and examples of social impact that can be generated by digital technologies; but it is a strategy 'for all', including all individuals, sectors and organisations in the society and all sectors of the economy, regardless of the prior purpose being 'people, planet, or profit'. This means that all kinds of examples are included, but the strategy is not differentiated by 'purpose', between social economy (and social enterprises) and the 'other economies' (and other enterprises).

The 6 action lines to develop public-private partnerships are (Ministry of Economic Affairs and Climate Policy, 2018): Big Data Analysis; Cyber-security; Blockchain technology; Artificial Intelligence; 5G; and Quantum Computing and Quantum Software.

Good practice examples refer for instance to the use of blockchain for a more transparent and fairer price. The national government is one of the founders of the Dutch Blockchain Coalition and has commissioned a study on the scope offered by legal frameworks for exploiting the opportunities of blockchain technology, mitigating possible risks and exploring points requiring attention for future legislation. Dutch Blockchain Coalition is creating an ecosystem to strengthen the "Blockchain for Good" vision, which "assumes the idea that a far-reaching technology like blockchain must be properly regulated […] obstacles must be overcome and the outcome of that must be used for good, in other words, for a better society". Experiments will lead to demonstrably valuable applications in the following 6 fields: Self-Sovereign Identity (SSI); Logistics; Academic certificates and diplomas; Pensions; Compliance by design; and Mortgages.

Also, in other digital fields national coalitions have been set up, e.g. the Dutch Artificial Intelligence Coalition. Over 65 companies, social organizations and research institutions launched this coalition on 8 October 2019. According to the coalition, the Netherlands and Europe are well-positioned to distinguish themselves internationally with an approach in which public values, civil rights and the human factor feature prominently.

Of special relevance for the social economy is the joint research agenda of all 14 universities in the Netherlands: 'Digital Society Research Agenda; Leading the way through cooperation in a Digital Society'[63]. The Association of Universities (VSNU) has brought together 30 leading professors to

[63] https://www.thedigitalsociety.info/about/

address the many pressing questions raised by the emergence of a digital society. The professors work together in the Digital Society programme and support the development of "**technologies and applications that serve societal goals** and interests, and which can be an example to all". The aim is to develop a leadership role in **multidisciplinary research for a human-centred digital society**.

Overall, a main success factor concerns programmes at higher education institutes in the Netherlands which are specifically focused on social entrepreneurship (European Commission, 2019; OECD/EU, 2019).

An interesting pioneering initiative is the **Odyssey** Open Innovation Program[64]. It connects governmental, corporate, and non-profit partners to breakthrough solutions based on blockchain and AI, and fosters the creation of interconnected, multi-stakeholder ecosystems that collaboratively solve complex 21st-century challenges. With support from the Dutch government, Odyssey mobilizes a global community through a series of events, the world's biggest blockchain & AI hackathon, and a decentralized incubation programme to scale and adopt the best solutions. Each season, they bring together the essential stakeholders, with whom they articulate complex challenges, exchange knowledge and prepare for the momentum: the 48-hour hackathon, where teams develop prototype solutions, supported by all program partners, 200+ specialized experts, legal advisors, and financial regulators. In the past three years, more than 230 working prototypes have emerged from the program, of which 30% have been further developed towards adoption or have been adopted.

Besides coalitions at the national level, there are also local and regional initiatives, such as The Hague Humanity Hub[65], which is a community of 90 member organisations that organise meetings (hackathons) and initiatives that lead to innovations that contribute to peaceful and just societies. The city is branded as an international centre for organisations that are specialised in the field of peace and justice.

Since many of the Smart Specialisation Strategies at regional level concern ICT in relation to certain societal challenges, social enterprises are increasingly involved in regional innovation policy projects and programmes, especially in areas concerned with the development of social economy clusters, create or extend the value chain of the social economy or foster social innovation[66]. In this sense, regional innovation agencies, innovation infrastructures[67] and networks or clusters have opened-up and are reaching out to social enterprises as valuable partners in addressing societal challenges with joint innovation efforts.

1.4.4 The United Kingdom

UK's social economy landscape

The social economy in the UK has very deep roots and a longstanding tradition. The early institutionalised process is to be found at the beginning of the 1840s with the creation of the Rochdale Pioneers consumers' cooperative (1844). The legacy of the Rochdale Pioneers is the COOP UK (the Co-Operative Group) the largest cooperative in the UK. COOP UK is present in over 4,200 locations across the country and employs in excess of 70,000 people. The broad ownership base consists in over 4.5 million of active members[68].

The definition of Civil Society in the Government Strategy document is concerned with the production of social value and extends the reach and scope of the social economy to those areas where social

[64] https://www.odyssey.org/
[65] https://www.humanityhub.net/community/
[66] https://s3platform.jrc.ec.europa.eu/social-economy
[67] E.g. the hack4SmartServices at Brightlands Smart Services Campus. At the 2017 edition of Hack4SmartServices at the Brightlands Campus in Heerlen (Dutch Province of Limburg) ConSense won first prize for their data exchange platform offering solutions for health problems, including a community linked to this platform for both patients and doctors. The platform is based on blockchain technology to guarantee the security and privacy of the users.
[68] https://www.co-operative.coop/about-us/history

value is generated. According to the Government Strategy, the social economy refers to those individuals and organisations undertaking activities aimed at delivering social value that are independent of state control.

The social economy in the UK is extremely varied and comprises actors constituted in different legal forms, from personal/individual businesses to corporations engaged in multi-businesses. Though COOP UK, a single organisation that has been growing impressively since its inception in 1844, dominates the social economy system, there is a host of social economy initiatives of various sizes, legal forms and levels of maturity. In particular, the latest figures produced by Social Enterprise UK in August 2018 hint at a number of social economy enterprises (of different legal forms) nearing 100,000. They are involved in almost all sectors of economic activities including banking, financial services, insurance and utilities, and of course, in retail and personal social services of general interest. In terms of its size, the UK social economy employs some 2 million people and contributes around £60Bn to the National GDP (Social Enterprise UK, 2018).

The British social economy is characterised by very entrepreneurial ethics paired with the traditional principles of fairness and sustainability. In key sectors such as health and social care, the social economy outperforms both the public and private sector in terms of patient feedback ratings, staff engagement and service users' feedback as well as in terms of financial performance. Social enterprises are very innovative. A novel survey shows that over 50% of UK social economy enterprises have introduced an innovation in products or services (this compares to a 33% of UK SMEs).

Other points of pride of SE UK are the links with the local economy and its communities, and the contribution to the national coffers. In fact, "*Britain's top five cooperatives pay more taxes than Amazon, Facebook, Apple, eBay and Starbucks combined*" (Social Enterprise UK, 2018).

One brief glance has to be given to barriers to social economy activities. Access to various forms of finance is perceived as significant barrier by start-ups and established social economy enterprises alike and may become even more significant when associated with pressures on cash flows and on working capital. One barrier that shows up recurrently is the lack of skills, especially in digital marketing, branding and for staffing purposes. In fact, making use of appropriate technologies to capitalise on their activities remain a substantial barrier to grow yet a necessary skill/capability of the modern, market-oriented, social economy.

ICT and digital technologies in the context of UK's (social) economy

The national landscape of the British ICT and Digital capabilities is rather advanced both globally and compared to the other EU Member States. According to the Digital Economy and Society Index (UK Country Profile, 2019) the UK ranks in a high position, 5th out of the 28 Member States following Finland, Sweden, the Netherlands and Denmark. Moreover, in line with a number of other European Countries, its scores are set on an increasing trajectory. However, critical areas are identified in the 'connectivity' (rank 10th over 28 MS), human capital where exceptional growth in the ICT and digital sectors is not accompanied by a relative increase in skilled workforce. In the latter, it is highlighted a strong skill gap. In addition, the availability of digital public services where the UK ranks 11th denotes a relatively poor performance in critical areas such as health and social care.

In 2017 the British Government announced the **UK Digital Strategy** which sets out the Government's goals for digital infrastructure, creating an advanced skill-base, encouraging the use of digital tools and improving access to digital services. In this context, the UK Digital Strategy's is formed of seven strands, namely: (i) **Connectivity** – building world-class digital infrastructure for the UK; (ii) **Digital Skills and Inclusion** – giving everyone access to the digital skills they need; (iii) **The Digital Sectors** – making the UK the best place to start and grow a digital business; (iv) **The wider economy** – helping every British business become a digital business; (v) **A safe and secure cyberspace** – making the UK the safest place in the world to live and work online; (vi) **Digital government** – maintaining the UK government as a world leader in serving its citizens online; and (vii) **Data** – unlocking the power of data in the UK economy and improving public confidence in its use.

Within this institutional and policy context, the digital sector in the UK is outperforming other sectors of economic activities and, according to the Tech Nation Report (2019), is 'punching above its weight'. In particular, of the £6.3Bn venture capital investment accrued in 2018, 80% is destined towards ICT and digital scale ups. This data alone shows the size and the stage of the tech sector in the UK which is moving towards maturity in strategic areas such as Artificial Intelligence, Software as a Service (SaaS), ADTech, Payment Tech, CleanTeach, ecommerce, FinTech and Insurance. The social economy is an integral part of this strategic approach and the digital social economy has a small but significant role. In fact, amongst the 300,000 digital business identified by the latest Tech Nation report (2019), some 500 companies are engaged in 'Tech for Social Good'[69] and these are mostly social economy organisations (established either as Community of Interest Companies or Companies limited by Guarantees). There is also a significant number of 'profit and purpose' companies (i.e. for-profit companies using technology 'for social good'). Interestingly, one third of Tech for Good social economy enterprises are engaged in AdTech, FinTech and Artificial Intelligence.

Digital policy and funding instruments

The UK digital and ICT infrastructure is up high in the policy agenda and it has been for quite some time. In the latest **Digital Infrastructure Strategy**[70] set out in 2017, the Government established its priorities for 2020 including the completion of its connectivity plan, which consists of the full roll out of 4G and superfast broadband. At the time of writing, these priorities have been almost fully met. Planning ahead, the government also earmarked over £1Bn to accelerate the development and uptake of Fibre and 5G. Access to ICTs and digitisation, however, also includes measures for upskilling. Basic digital skills are set *au par* with numeracy and literacy skills and the Digital Skills Partnership is being established to that end. **The Digital Skills Partnership** involves governmental agencies as well as businesses and social economy organisations to identify digital jobs vacancies and train people to fill these. These measures are not directed to the social economy, but eligible social economy organisations may benefit.

Another pillar of the UK Digital Strategy[71] consists in the enhancement of the business environment and in particular in the setting-up of measures to maintain the country's primacy in digital innovation-led industrial growth. To this extent, the Digital Strategy earmarked some £4.7Bn in R&D funding up to the budget period 2020-2021, the creation of regional hubs of excellence and the identification of priority areas for further investments in technologies such as Internet of Things (IoT), Autonomous vehicles, Artificial Intelligence, HealthTech and EdTech in order to future-proof the digital strategy. Within this institutional and policy context, the digital sector in the UK is outperforming other sectors of economic activities.

Nonetheless, in critical area, there are policy provisions in place which, as we mentioned above, have been undertaken through the UK Digital Strategy (and the Digital Economy Act 2017[72]), the Industrial Strategy (2017)[73] to address criticalities in connectiveness and future industrial technological applications (AI, IoT, 5G and digital skills) and the NHS Long-Term Plan (2019)[74] to address critical issues in the areas of health and social care (from e-Prescriptions to the adoption of AI in medicine and patients' data issues).

Following the publication of the Hidden Revolution report by Social Enterprise UK (2018), the umbrella organisation pushed the government to engage with the social economy sector by introducing principles of social economy in the school curricula and use taxation to create incentives for firms with a social impact. The proposals of Social Enterprise UK go beyond the Social Value Act (2012 and 2013) according to which 'social value' becomes a requirement in public procurement.

[69] The designation of 'Tech for Social Good' identifies enterprises, including social economy enterprises, which use digital technologies to tackle societal challenges including reduction of waste disposal and upcycling, connect care providers with those in need, link local authorities, etc.
[70] https://www.gov.uk/guidance/digital-strategy-and-leadership#digital-infrastructure-strategy
[71] https://www.gov.uk/government/publications/uk-digital-strategy
[72] http://www.legislation.gov.uk/ukpga/2017/30/contents/enacted
[73] https://www.gov.uk/government/topical-events/the-uks-industrial-strategy
[74] https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan/

Funding schemes available:

The Social Incubator Fund is a £10 million fund delivered by the Big Lottery Fund on behalf of the Office of Civil Society. It was launched in 2013 to fund social economy ventures and ease them onto the market through grants ranging from £50k to £1.5 mil.

The Big Society Capital is an independent social economy intermediary linking social enterprises to social investors in order to generate social impact through investment opportunities. In recent years, it facilitated over £1bn of new capital investments through Social Fund Managers and Social Banks. A successful example of investments of the Big Society Capital, which also provides substantial investment funds towards the digitisation of social economy enterprises, is the Social Stock Exchange.

The Social Stock Exchange connects social impact businesses with investors seeking to achieve social and societal impact through their investments (whilst of course accruing financial returns). A summary of activities (as of Dec 2018) has been recently published and shows that there have been some 56 financial contributors towards over 3,500 deals raising capitals for over £2Bn.

Social investment tax relief, together with the Big Society Capital, the government introduced a tax relief on investments. Individual investors receive a 30% tax break on unsecured loans, flexible term investments, patient - over 3 years - social investments to eligible social economy enterprises.

The **Commissioning Better Outcome** and the **Social Outcomes Fund** have benefitted the social economy for some time and evolved into **the Social Impact Bond System** enabling social economy enterprises into the procurement through various support systems.

In terms of **private investments,** the **Buy Social Corporate Challenge** launched in 2016 is having an impressive impact on the social economy. The scheme, in collaboration with the Department for Digital, Culture, Media and Sport and Business in the Community sought to open up corporate value chains to include social economy enterprises amongst their preferred suppliers. By April 2019, the Challenge generated over £650Mil in revenues for 250 social economy enterprises, over 630 new jobs and £5.5Mil of new investments in the social economy. Moreover, in the same month the Challenge was taken up by SAP UK Ltd by opening up its £2Trillion per year business-to-business market-place platform Ariba Network.

These activities are directly (through capital investment funds) and indirectly fostering the digital agenda for the social economy. They provide operative funds through grants, public and private contracting and incentivise digitalisation through providing revenue opportunities digitally.

2 New Technologies and Digitisation: Opportunities and Challenges for the Social Economy

2.1 The importance of the social economy for the socio-economic challenges of the EU: the role of entrepreneurship and social innovation

The social and economic challenges linked to unemployment, poverty and social exclusion pose significant drains on national economies and a waste of potentially productive resources during a period where Member States budgets are particularly under pressure. Long-term demographic changes are affecting the composition of the population in Europe putting serious strains on Europe's social protection systems. Moreover, the global emergency linked to sustainable living is challenging the economic understanding of consumption and the principles of economic growth.

The Toia Resolution in 2009 (Committee on Employment and Social Affairs, 2009) acknowledged the wider role and significance of the social economy for the prosperity of the European Union, pointing that social economy enterprises are *de facto* important economic actors fostering the value of the European Social Strategy as they address crucial socio-economic challenges such as unemployment, the ageing society and inequalities. This acknowledgment is particularly important since it reflects the weight and the overall importance of the social economy in Europe.

Currently, there are about 2 million social enterprises estimated to be operating in Europe. They account for almost 10% of all active businesses and employ more than 11 million people constituting about 6% of total EU employment (European Commission, 2017).

The social economy is therefore key to the effort of the European Commission to tackle societal challenges. In recent years this determination was further intensified when former President Junker, as part of his State of the Union Address to the Parliament in September 2015, brought forward the European Pillar of Social Rights which, after extensive consultations, was approved in April 2017.

The European Pillar of Social Rights brought, once again, social and societal challenges to the top of the European agenda re-affirming an approach where the principles of the social economy are central to the European development strategy. This approach is also sustained on a global scale by the European Union's participation and commitment to the Millennium Development Goals[75] and its contribution to setting the 2030 Agenda for Sustainable Development[76]. Within the 2030 Agenda, the European Union identified amongst its key supporting actions a wide-reaching effort to sustain the digital transformation of its socio-economic structure. In this effort, the EU is ramping up and renewing its commitment to the Digital Single Market to maximise the growth potential of the European Digital Economy through the digitisation of the European industry; promoting eco-innovation and sustainability through stimulating development and take up of digital and key enabling technologies. In this setting, the EU is putting in place actions to strengthen the ecosystem of the social economy operating in key strategic sectors such as healthcare, social impact for the common good, inclusivity and community resilience, sustainability and overall promoting European social values (SWD(2016) 390 final).

These aspects have been recently reaffirmed by President von der Leyen in the Presidential Address to the European Parliament (July, 2019) whereby European ambitions towards the 2030 Agenda have been strongly endorsed, and the European pillar of Social Rights and the social market have been put at the centre of the agenda. The newly appointed President raised the issues of fostering employment, social fairness and welfare, tackling social exclusion and poverty, promoting equality through social security, education and infrastructure and encouraging sustainability and health. In this view, digital technologies have been called upon for "*A Europe fit for the digital age within safe and ethical boundaries*". Digital technologies such as artificial intelligence (AI), Internet of Things and the 5G network are seen as enablers of digital sovereignty and launchpads for the next generation of

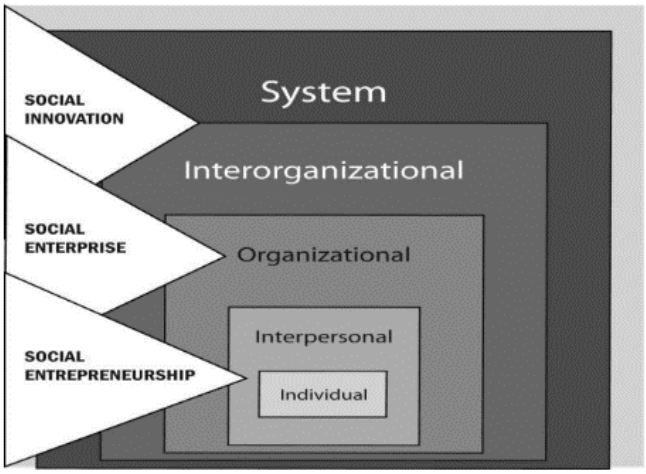
[75] https://ec.europa.eu/europeaid/policies/european-development-policy/eu-millennium-development-goals_en

[76] https://ec.europa.eu/europeaid/policies/european-development-policy/2030-agenda-sustainable-development_en

hyperscalers. Digital technologies are set to improve labour market conditions and platform workers (the Digital Service Act), empowering people through education and skills (setting forth for the Digital Education Action Plan).

This systemic approach has been devised to foster modernisation of the social Europe towards a more resilient socio-economic system. It reconnects with the view that societal challenges, including those identified in the 2030 Agenda, may be only tackled trough "*social and societal impact assessments that ensure a level playing field and stimulate innovation, competitiveness and jobs*" (p.6). This suggests that innovation is an essential element of social policy, and that digital technologies may help in finding solutions to societal challenges. Within this context, the social economy may provide the operative context where social entrepreneurs act as catalysts of the digital social innovation drive. We may summarise this approach by highlighting that the social economy comprises entrepreneurial ventures which are the connecting fabric and indeed the operative units for social change. Social innovation is the means through which the modernisation of the social economy is taking place.

Figure 5: A systemic view of social innovation and social entrepreneurship



Source: Westley and Antadze (2010)

One important aspect of this approach regards the relation between social innovation and technological innovation. In the context of the digital transformation, which is affecting almost every aspect of human life, the debate focuses on technologies – and in particular ICTs and digital technologies – which provide support to enterprises (commercial or social) for overcoming a wide array of organisational, technical and social problems. In other words, social innovation spans across the domains of the social economy and technological innovation. This is especially important since technological innovation and the diffusion of technological products and artefacts within the social economy manifests through the change in social practices (Alijani & Wintjes, 2017; Amanatidou, Gagliardi, & Cox, 2018; Borrás & Edler, 2014).

In the next section we explore the digitalisation of the social economy as a phenomenon that combines the characteristics of technological innovation – the digitalisation process – and those of social innovation – the provision of new and/or improved products and services and new processes that meet social needs, as leverage to upgrade the European and national economies.

2.2 Digital transformation of the social economy

Digital transformation is the process through which the adoption and deployment of ICTs and digital technologies is radically improving systems' and organisations performance. It has become the paradigm according to which economic and social activities, governmental and policy, and personal/ social interactions are designed. Majchrzak, Markus, and Wareham (2016) recently highlighted that the impact of the digital transformation extends across a range of societal challenges, including employment, climate, health and migrations. They also suggested that: "*researchers interested in*

societal or business change should consider emergent digital designing as a replacement for organisations" (p267).

This view may be evidenced by recent global trends where we are currently witnessing the shift from economic activities towards digitally-based businesses. In fact, in the last decades, global businesses based on digitally-enabled designs and digital-born businesses have registered higher growth than any other business (Microsoft, Facebook, Google, Amazon, Apple, Alibaba to name but a few global hyperscalers). At the same time, the digitalisation process is pervading the social economy and other domains of human activities, which are not strictly business-like such as government and society in general.

In this section we present the framework through which we explain whether/why and how the integration of digital technologies (in either products and services or internal organisational processes[77]) may radically change the design and delivery of new/better social impact. Digitally-enabled social economy enterprises are those organisations that have adopted a substantial strategic stance in the digital transformation process by having integrated technological solutions within their organisation and/or in the design and delivery of social goods and services.

Technologies driving the digital transformation are **digital platforms** and **advanced technologies** and applications. These technologies and their impact on the social economy will be discussed in detail in chapter 3 and 4.

Digitally-enabled social economy organisations are set out to capitalise on the potential offered by digital technologies. For example, **digital social platforms** may be used as an open virtual infrastructure to catalyse community engagement, deploy applications of various nature - from booking appointments and geolocation to payment and content sharing apps - and extend operations outside the local community within which they are deployed. They may also be employed as a closed organisational tool to manage complex processes and reduce internal redundancies such as managing members' or beneficiaries' requests and internal staff tasks – both paid staff and volunteers – and training developments.

Advanced technologies may be integrated within platforms and become part of larger virtual digital ecosystems. These may be key components necessary for the efficient functioning of digital platforms such as Distributed Ledger Technologies, AI applications and Internet of Things. Alternatively, they may be integrated as plug-in digital services linked to the functions of a platform such as geolocation and other service applications (i.e. payments and transaction records). Advanced technologies can also be used individually as part of the organisation's management processes. This is the case of database management applications, which are usually employed to digitalise internal processes or distributed ledger technologies, and blockchain, which may be employed for smart contracting. In this class, there are also CRM systems for the management of members, suppliers and customers relationships. In addition, AI applications are also increasingly used to systematically sort through large amounts of structured and unstructured data to support professional service provisions. Artificial Intelligence applications such as chatbots may be employed through familiar user interface (i.e. a chat/dialogue box) in order to fill in form and collect data that otherwise would require more laborious systems or robo-advisers which, on the basis of available data and information, may provide suggestions through algorithmic elaborations. Internet of Things applications are increasingly used to collect data from remote sensors in order to provide unmanned (or supervised) monitoring services.

In other words, the possibilities offered by digital technologies are numerous and growing. As technologies are consolidating and more use cases are being tried and perfected, they are finding their place and use in the social economy. For example, big/open data are increasingly embedded in activities related to local communities, they may be used to promote the commons as a viable alternative to market-based transaction systems and data sovereignty awareness; match-making

[77] Digital technologies include digital platforms, software applications and other new/advanced technologies operating within the Internet of Things, big data, distributed ledger technologies such as blockchain and artificial intelligence.

applications are increasingly used to source competences on the labour market. Crowdfunding platforms and applications are used to collect donations or provide alternative (social) investments in support of social ventures. Moreover, the adoption of game-changing digital innovations in healthcare are introducing efficient and cost-effective solutions such as e-medical records and digital consultations. These, for example, may be able to reach seamlessly the frailest or excluded population via mobile communication or provide alternatives to in-patient consultations in already overstretched health systems. In education, for example, the development and deployment of new digital applications (EdTech) for remote and lifelong learning are changing the approach to learning as well as the skill sets of students who otherwise would not be reached effectively.

Digital platforms and advanced digital technologies are being used in all sectors of the social economy. For instance, in environment and sustainability they underpin new social models of green/self-production and energy distribution, personal transport sharing, environmental protection. They also provide new means to social support for disadvantaged groups, education and training, etc. In these areas, the social economy, whether organised through new organisations (social economy start-ups) or established social economy enterprises, is employing technologies that, by definition, transcend the barrier of direct face-to-face communication by introducing 24/7 active services, one-stop-shop points of services, ubiquitous (i.e. accessible from anywhere at any time) and technology-independent access (access to service, goods and content from PCs, laptops, tablet, smartphones).

Examples of digitisation are analysed further through case studies presented in the remainder. However, we would first gain a better understanding of how new technologies and digitisation may be adopted by the social economy and how social economy enterprises and organisations are geared towards exploring new digital social innovation practices, hence exploit opportunities, paths and procedures in the pursuit of their social missions.

2.2.1 A digital innovation framework for the social economy

In this section, we are looking at how technologies can serve the social innovation process in terms of emerging of new combinations or new organisational arrangements within the social economy. Thus, we investigate how the adoption of digital technologies within the different functions of social economy organisations enables the innovation process and may advance the digital transformation discussed in the previous section.

Introducing or developing new digital solutions within a social economy enterprise may affect the internal organisation (organisational innovation), the interface with the external environment (product and service innovation) or both (digital transformation of the social economy). The operationalisation of this analysis refers to the concepts of *'operand'* and *'operant'* use of technology introduced by Akaka and Vargo (2014).

Technology as 'operand'

The use of digital technologies in an *operand* way implies that **IT applications are employed to support existing operations**.

For many existing social economy enterprises, this 'mode' of introducing or adopting digital technologies may be the first step, or the entry point, towards the digital transformation. The digitalisation process may proceed through the transformation of analogue activities by means of digital technologies. The process typically starts with the digitalisation of operations in the back-office (admin, accounting, case management, etc.) in order to foster efficiency and effectiveness. At the end of the process we may witness an overall re-design of internal operations. The digitalisation may also include front-end processes[78]. These are usually digitised in order to extend the reach of social

[78] Moving sales online, for instance, may provide both cost/efficiency gains in the sales functions and improved performance in terms of volume of transactions. These may be obtained by exploiting the opportunities offered by the digital technologies to increase visibility and reach on the market. The digitalisation strategy may be rather linear and consists in setting up a digital marketplace on a website

economy enterprises through the Internet. In the following textboxes we provide some illustrations from our case studies[79].

Formichine (Little Ants)

The **"Formichine" (Little Ants)** initiative established in 2009 to offer opportunities for employment placement to people, especially women at risk of social exclusion. Through its network, it also creates jobs for people in difficulty and manages reception services for asylum seekers.

The technology deployed is rather basic and supports the management of databases and the matching engine. The technology is easy to use and derive from an existing management software. It provides an efficiency gain that could not be matched by analogues practices and therefore contribute to a series of activities.

Established as an internal platform, it enables the possibility of distributed and asynchronous workflows linked to internal resources such as products, calendar, staff and volunteer management and finance.

Nea Guinea

Nea Guinea is a non-profit organisation that begun operations in 2009 with the social goal of re-appropriating daily human needs in terms of food, health, energy, shelter, and clothing. Its activities are in education (practical and theoretical workshops), awareness raising, and development of self-reliant practices and applied technological services concerning sustainable farming technologies and renewable energy systems.

The technologies used are open source software and open hardware. These are used in combination to activate pilot projects and production using 3D printers and laser-cutters for components. The technologies used are deployed in order to produce their installations, pilot and develop sustainable farming and renewables more effectively (and ethically) compared to traditional methods.

The direct outcomes of such digitally-enabled innovation may be assessed through standard economic indicators, such as return on investment, growth of operations, etc. However, the impact of the introduction of ICTs as support services and the digitisation of (previously) analogue operations may be far greater and extends to improved management and processes, increased production or transactions as well as reach. The effective implementation of such innovations may also inspire, suggest or even sometimes require digitalisation of other internal processes (i.e. in the case of e-sales we may think of complementary activities such as digital marketing, stock management, logistics and administration in case of goods or relay processes in case of services). In order to implement these changes, the tasks of the management and employees may change adding, for example, digital skills and new competences to the social economy skillset.

The Formichine project (IT) and Nea Guinea (GR) are two different social economy enterprises belonging to the group of those using technologies in an operand way. Here technologies support their main activity and yet they are contributing towards the longer-term economic viability as well as creating social impact.

Technology as 'operant': towards a digital social economy

The *operant* role of technologies is linked to the intangible value of ICT resources whenever they are integrated within the entrepreneurial process and therefore triggering of organisational innovation as well as product and service innovation. **Social economy organisations using digital technologies in an operant way are fully digital or digitally-enabled organisations.** We may think of a social economy enterprise whose processes and activities are completely enacted through digital technologies. These include internal organisation functions such as administration and management

or on an already operating host platform at only a marginal cost.

[79] The full report of the case studies available in Annex II.

of critical/strategic functions as well as external-facing operations such as relations with beneficiary, members and general external relations activities.

Whilst of course this model may be implemented by already existing in the social economy, many new social economy start-ups are gearing towards integrating digital technologies - as operant - by design; thus, building their internal organisational structures and operations directly through digital technologies. These are cases where, for example, a social economy organisation is set out as a digital community, a social platform or where the object of social operations is reliant on specific digital technologies such as AI for good, blockchain for secure record keeping and transaction monitoring, digitally-enabled education and training and world-wide environmental/sustainability campaigns.

We can identify two different sub-types of digitalisation strategy whereby technologies are used as operant: **1) technology is the end product, 2) the services provided are relayed digitally to the final user**. In the first case (when technology is the final product) the output of the production process is either a software, a hardware or a combination of both; usually the characteristics of the products are open source (open source software/open hardware) and the organisation centres around these artefacts to foster their main social concern.

The technologies used are usually highly customised to the social economy needs and/or are new/experimental technologies. It is in these types of social economy organisations that we may find purpose-built social platforms with new/advanced technologies providing specialised digital services. Here, we may also observe that many of these technologies have attributes that are in line with the principles and values of the social economy. In fact, platform technologies tend to work appropriately by gathering communities of interests and may indeed be employed to foster social communities. Moreover, technologies like open source (software and hardware) and the application of open standards align particularly well with the principles and value of inclusiveness. Likewise, distributed ledger technologies, though their use is still in its infancy, line up with the characteristics of decentralised/democratic decision-making processes typical of the social economy[80].

We may also observe that whilst income generation is dependent on the transactions linked to technologies and services on the digital marketplace, value creation resides in the deployment of digital technologies and applications - the core component of social innovation.

There are many technology cooperatives and other organisations operating in the social economy with similar characteristics. An example of such a social economy enterprise is Outlandish.

Outlandish
Outlandish is a worker cooperative that develops technology-based solutions on a project-base. It uses agile methodologies to develop ready to use products together with the end users. It follows an iterative process of co-production. Outlandish collaborates with a wide range of clients including, amongst others, social enterprises, NGOs, government's organisations and worldwide third sector institutions. Outlandish relies on different digital applications (such as platform technologies and budgeting tools) to carry out its activities and to facilitate collaborations amongst its own members. Technology areas within which it is active include: (i) Data tools & dashboards; (ii) Websites & campaigns; and (iii) Prototypes & innovation. The majority of its income comes from working with clients. Outlandish, after it covers its operational costs, reinvest its surpluses in projects of its own including prototyping and projects for social change.

In the second sub-type, interactions between the social economy organisation and the external world happens by digital means. The focus of the social economy actor is on blending specific digital applications both for organisational purposes and to provide services and meet users, beneficiaries or society's needs. It is important to underscore that digital social economy organisations may interact

[80] These aspects are discussed in chapter 3 and 4 of the study.

with their user-base, members and society virtually without intermediation or, at least, with a high level of disintermediation. For example, products and services may be exchange autonomously or accessed and operated following individuals' schedules without impairing service delivery[81].

In this category we may find either social economy enterprises which have managed to translate the provision of traditional services through digital technologies and those that have created **new types of social relations which would not be possible without the application of digital technologies** or a digitally-inspired organisational design.

In the first case - translate the provision of traditional services through digital technologies – we identified XenZone (UK), an enterprise engaged in access to mental health prevention, support and treatment and Energia Positiva (IT), a platform-based 'prosumption' cooperative engaged production and consumption of energy from renewable source.

XenZone

XenZone started up in 2001 by using digital technologies to create new ways for people to access mental health support and treatment. XenZone works with the Clinical Commissioning Group of the National Health System and local institutions to contract out services to be provided to over 46,000 children and young adults, students and adults. Its main services are all digitally enabled and include:

(i) **Kooth**, which is a digital mental health support service. It gives children and young people easy access to an online community of peers and a team of experienced counsellors;

(ii) **Qwell**, which is an online counselling and emotional wellbeing service providing adults with early intervention support; and

(iii) **Minds for Life** which is a family of mobile apps that bring clinical best practice in recovery and self-management to those seeking mental health support on their own terms.

It is ground-breaking use of data and AI to create new models in preventative, early response mental healthcare and investigations with collaborators opportunities of Deep Learning and Recurrent/Time-dependent Neural Network applications.

Energia Positiva

Energia Positiva is an Italian social cooperative established in 2015 and dedicated to sustainable energy production and sharing. Members of Energia Positiva share ownership of renewable energy production plants and may then use the energy produced (producers- consumers, prosumers).

Energia Positiva uses a digital platform completely developed in house and self-operated to manage members' shares in renewable production plants located in different geographical areas. The current functionalities of the platform emerged through a series of successive technological accretions implemented to enable new functions to meet members' needs and expectations for example, enabling web-based functions such as managing their subscription and association and support growth.

To date the platform is used to manage members' ownership of share in some 50 renewable energy plants, users' energy consumption for over 1700 families, new members subscriptions and management including billing and contributions as well as new complementary projects.

As growth continue to be strong, Energia Positiva is looking into AI and distributed ledger technologies (blockchain) to improve the platform's processes and add further layers of security. These developments are still at the experimental stage and, whilst intended to provide a fully digitalised experience to their users, details are being worked out together with their technology partners (i.e. e+tech)

[81] An example of application of these principles may be illustrated by the case of *Just Checking (UK)*. The focus of Just Checking is on the application of digital artefacts: non-intrusive sensors and monitoring software to provide monitoring services for adults with learning disabilities and people in need of support. The Beneficiaries do not need to interact directly with the technology or use wearables technologies, and family members, health and social services are informed in case the person monitored significantly deviates from routine activities within their living quarters.

'Hybrid' use of technologies

Some social economy organisations progress through the digitalisation process by adopting technologies in a 'hybrid' way. This 'hybrid' mode of deploying a digital strategy - including both operand and operant uses of technologies - may be found in many established social economy enterprises that are already at an advanced stage of their digital transformation. These usually proceed towards the integration of **digital technologies within their existing operations by digitising analogue activities. At the same time, they are integrating new digitally-based products, services and models.** This mode of employing technologies is compatible with further digitisation of internal functions and the provision of bundled services.

Typical cases consist of one stop-shops, optimised/customised integrated or bundled services. Here, the provision of different social services digitally depends on both the digitisation of critical internal functions (such as management of different streams or across service units) and the interface with the final users who may be able to access specific services from a single point of contact. **Incrementally, operations of a social economy organisation may be undergoing a digital transformation**. Evidence obtained by studying hybrid uses of technologies show that social economy organisations proceed towards the digital transformation **until a balance between the costs of digitalisation and the benefits deriving from it is reached.** In fact, this mode is very diffused amongst those social economy organisations operating in areas where the end users (beneficiaries or members) for some reasons - poor digital skills, learning disability or lack of resources, - have sub-optimal ways of interacting through digital means.

There is no single technological solution for this type of digital strategy. Technologies used to digitalise functions such as accountancy, databases, rotas or online sale applications may be readily available either in open or closed source and may require little adaptation for their implementation. On the other hand, more sophisticated solutions, those used to digitalise core functions therefore move the social economy enterprise towards a fully digital organisation, may not be promptly available. Indeed, for the digitalisation of strategic activities bespoke or even tailor-made technological solutions have demonstrated to be, not just a preferred option but a necessary one. This is particular important since the **technology needs to reflect organisational distinctive requirements and modus operandi.** Nonetheless, in the greatest majority of the cases we have scoped, open source applications are favoured because their openness is in line with the values of the of social economy and because they may provide more flexibility for adaptation and avoid lock-in with vendors for expensive upgrades. In a handful of cases we have also found evidence that digital solutions were developed *ex-novo* using internal resources and capabilities.

This "hybrid digitalisation" provides at the same time two types of changes within the organisation: 1) **efficiency gains**, since some functions such as bookkeeping, administration or sales are transferred onto a digital technological support and 2) **a change in the ways in which operations are carried out**, since integration of digital technologies in core activities may require different models value creation/extraction. This innovation model may be, in fact, particularly apt at fostering internal efficiency and drive organisational innovation whilst maintaining a high degree of service variety/complexity.

HMR Circle (UK) is such a case, as it uses digital technologies to carry out internal organisational tasks and organise social activities and services for their members/beneficiaries; yet, it delivers social services on a face-to-face basis.

HMR Circle

HMR Circle was conceived as a project "to support ageing people to live flourishing independent lives". The initiative offers various on-demand services to its members. Services are provided on a face-to-face basis and range from organising social calendars, providing support in specific and varied user-centric tasks, and transport services.

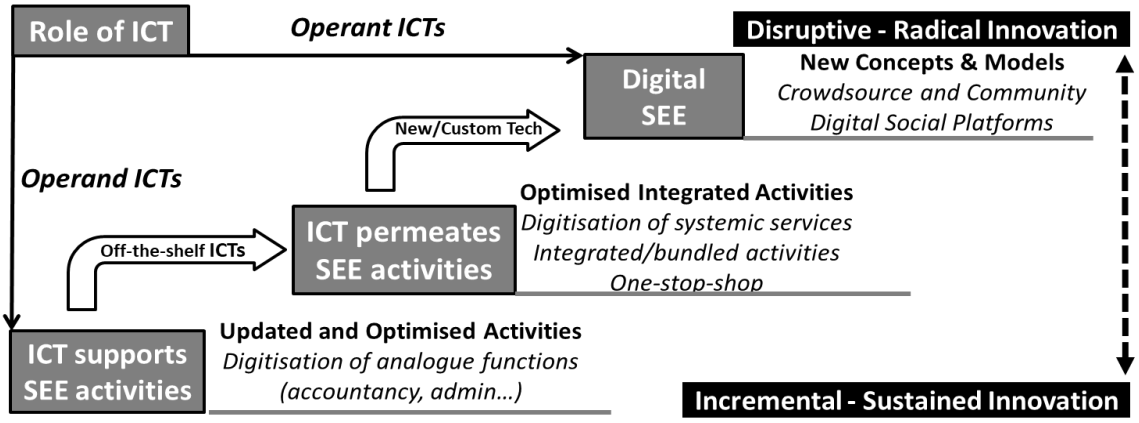
Currently, HMR Circle uses a Customer Relationship Management (CRM) software which has been developed in house and operates as a 'closed platform' used by staff and volunteers. Minimal training is required for the use of the platform. This technology plays an important role in how internal processes are organised and resourced deployed. 'HMR Circle' work is carried out by a varied mix of staff, part time and volunteers 'community of helpers'. This community is very diverse and is tasked with managing and coordinating heterogenous networks of people with varied profiles, wants and needs. Therefore the platform is essential to managing this diverse range of 'helpers' profiles' and users/members needs.

At the beginning the initiative used a CRM that was configured for the purposes of the initiative; later on, it was decided to develop a customised integrated solution to meet the requirements of a faster response fit for a complex environment, able to support new services, cost effective and efficient.

Future technological developments are oriented towards integrating the platform with further functionalities and support applications for older/frail people

We summarise the different ways technologies are employed within the social economy in Figure 6.

Figure 6: The role of ICTs in the social economy innovation process



Source: Adapted from Gagliardi, Misuraca, Niglia, and Pasi (2019)

Looking forward

In addition, within the social economy, there are also organisations whose mission and vision focus on the **social and societal consequences of new and emerging technologies as an instrument for social change guided by the ethics of the social economy** (fairness, openness and inclusivity). These social economy organisations are at the forefront of digital-social innovation at the technological frontier. They promote ethical development and application of advanced or not-yet established technologies working with partners from the social economy, universities and institutions, and the market economy. These social economy actors provide early signals on technology development through research and help to bridge the divide between the digital economy and the digital social economy.

The function of these social economy organisations is particular important because the models of technological change in the social economy are not structured in R&D centres where technologies may be researched and/or undergo pre-commercial development as in large enterprises. **Their role in the social innovation process is that of creating experimental spaces where emerging technologies are confronted as an instrument for other social economy innovators and provide a hub for education and co-creation.** Moreover, they may also be the spark from which new digital social ventures may originate as in the case of Waag's own spin off: Fairphone[82].

[82] https://www.fairphone.com/en/story/

The Waag Technology and Society

Waag was established in June 1996. It is a middle-ground organisation composed of research groups working with both grassroots initiatives and institutional partners across Europe.

The Waag team comprises some sixty thinkers and makers working to empower people to become active citizens through technology. They focus on technology as an instrument of social change, and are guided by the values of fairness, openness and inclusivity.

Although Waag does not engage in technology development and industrial production (though, for example, FairPhone, the ethic smartphone, is a spin-off of Waag), it works at the technological frontier where new technologies emerge.

Its expertise is in researching, experiencing and discussing emerging technologies with a public concern and civic activism attitude, pointing out opportunities and threats in terms of social change and impact**.**

SocialTechno

SocialTechno is a social enterprise established by professionals and entrepreneurs working in the fields of technology and the social economy. As a **member of the TechSoup Global Network**, SocialTechno acts as a hub for organisations working for progress and social change of communities around the world, by leveraging and enhancing their capabilities and competences.

It promotes the computer culture and technological development of Italian non-profit organisations by encouraging synergies with international high-tech for-profit companies, like Microsoft and Cisco. This allows social economy organisations access to innovations and exploit the advantages of advanced digital technologies. These activities are achieved through technological procurement (e-market for digital technologies – software and hardware) via the e-commerce platform

SocialTechno operates a platform-based marketplace where social economy enterprises can access digital technologies according to their status, needs and availability

This framework, albeit partial, evidences how digitalisation may enter the social economy innovation process through various means, at different levels and with diverse outcomes. However, the reasons behind deciding to embark in digitalising all or parts of operations is also particularly important. The digitalisation process creates new opportunities. We proposed a framework for digital innovation in the social economy highlighting the digital innovation models undertaken. We showed that within each category, our study cases are geared towards upgrading/designing their digitalisation strategies and planning to translate these into new functionalities. We have seen cases whereby introducing progressively new technologies to replace and improve existing processes may provide efficiency gains and initiate a more substantive and sustained innovation process. We have also seen cases where the idea of a digital social economy organisation may be created by design[83].

[83] The reasons for embarking in a digitalisation process or deploying a fully digitised social economy may have become, by now, self-evident. However, it is worth underlining that in traditional business academic's (Henning, 2016; Oswald & Kleinemeier, 2017; Zimmermann et al., 2015) and practitioner's literature (Accenture, Deloitte, McKinsey) digitalisation and the digital transformation of businesses are considered organisational design tools employed to streamline internal organisational processes (from production to management and other business functions) and meet the customers over digital multi-channels (mobile devices, tablets and workstations). Importantly, the particular organisational design would be specific to the firm's pursue of competitive advantage. These characteristics suggest that the successful digital enterprise would nonetheless be based on lean organisational models and, generally operate 'as if' it were constantly starting-up. References from Accenture: https://www.accenture.com/bg-en/insight-digital-

In the next section we explore the entrepreneurial aspects within the social economy in relation to the digital innovation framework developed in order to understand how technological innovation, in the various declinations presented above, may contribute to the shape operations within a social economy organisation and support its social impact objectives.

2.2.2 From a digital innovation model to an entrepreneurial social economy

The **digital social innovation models** described in the previous section highlight how digital technologies may be introduced and integrated to **modernise organisational functions, product and service provision as well as facilitate the creation of new relational models**. Nonetheless, the framework needs to be contextualised taking into account social entrepreneurial aspects in order to explain the relationship between technology uptake/integration and entrepreneurship within the social economy.

Carrying out a social mission through entrepreneurial activity introduces a further element of complexity in terms of economic viability. In the words of Smith et al (2013) "*These organisations seek to achieve social missions through business ventures. Yet social missions and business ventures are associated with divergent goals, values, norms, and identities*" (p.407). In other words, reconciling entrepreneurial activities with the drive to achieve social impact may create tensions within the organisation[84].

Contextualising these observations, we can see that the digitisation process being implemented in the social economy is either embedded in the organisation's evolution (in the case of an existing organisation) or in the social economy entrepreneurial venture (in the case of a start-up). The digitisation process may be implemented at the level of

1) the **internal organisation** of the social enterprise (modernisation of the organisation which is efficiency-driven),

2) **integration of operations** (digitisation of back office/organisation and integration of services which is both efficiency and effectiveness driven) or

3) the overall **design of the social economy enterprise** (digital social enterprise – in organisation, business model and product/service delivery).

The digitisation process affects the ways in which the social economy enterprise operates and should be consistent with:

i) the **social vision and mission** of the social economy enterprise;

ii) the **social business approach** to tackling the social/societal issues and

iii) the **business model** adopted which will assure long-term sustainability

enterprise; Deloitte: https://www2.deloitte.com/us/en/pages/technology/solutions/digital-enterprise-offering.html; and McKinsey: https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-digital-enterprise

[84] The authors identified 4 sources of such tensions:

Performing tensions – emerging from divergent outcomes for example on how to define success, or how the social economy enterprise may support both social and financial objectives.

Organising tensions – emerging from divergent internal dynamics on how to align the social mission with the business venture or in hiring decisions (i.e. hiring people with skills aligned with the social mission or geared towards efficiency and profitability?)

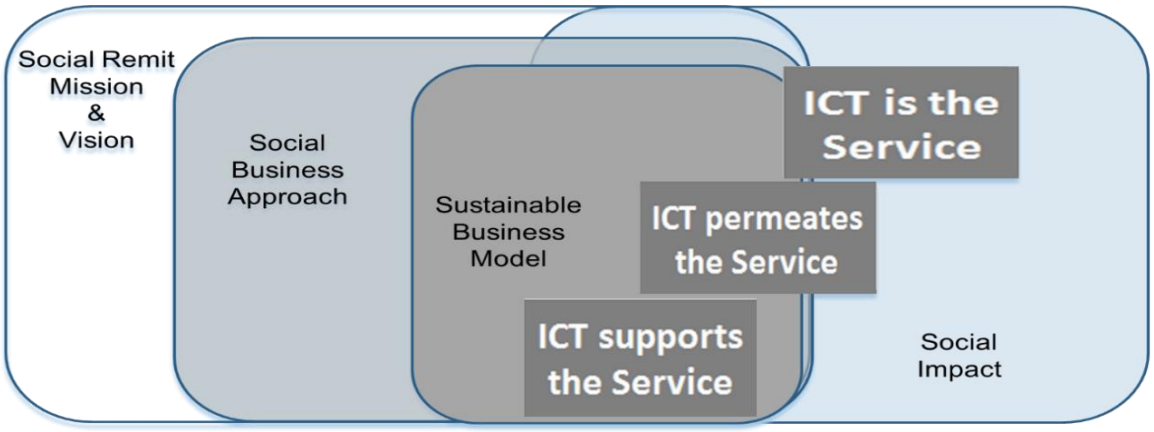
Belonging tensions – emerging from divergent identities for example, between employees and stakeholders; it raises the question on how the organisation can manage divergent expectations between sub-groups or present the hybrid social-business venture externally

Learning tensions – emerging from reconciling the organisation's objectives: social versus business. such tensions may emerge when focus is placed upon achieving social impact (a long-term process) whilst business metrics measure short-term results; growth may accrue at the expense of the ability to achieve social impact and vice versa consequently, short-terms business costs may not be justified in the context of long-term social expansion. (Smith, Gonin, & Besharov, 2013)

As depicted in Figure 7 below, the digitalisation process – whilst firmly rooted in the vision and mission of the social economy – enables the social economy enterprise to pursue its social mission more efficiently and effectively.

The figure shows that the process is contextualised within the social business approach that is the underlying idea of how to approach the social or respond to societal needs. The approach needs a suitable and sustainable business model which assures the continuation of the social economy enterprise through supporting appropriate revenue streams.

Figure 7: Operationalisation of digital technologies (ICTs) contribution to social economy impact



source: own elaboration

This representation shows how **tensions within a social economy enterprise** may be conceptualised in order **to provide a consistent internal organisation and interact effectively with the external environment (funders, contractors and users) and to generate social impact through market relationships**. However, the activities of social economy enterprises vary greatly according to the socio-economic characteristics of the ecosystem within which they operate. The social economy operates in a variety of environments and deals with a number of social and societal issues. Some of the cases studied, for example, operate in poor local communities where the availability of services, in general, and digital services, in particular, may depend on the readiness and quality of the digital infrastructure, the digital skills of the social entrepreneurs and the IT literacy of the beneficiaries, members or users. These factors may directly affect the level of digitisation of processes and therefore the social innovation performance of the social economy. In fact, amongst various issues, such as funding available and personal capabilities, the social economy may be highly constrained by the digital endowment of the ecosystem. To this end, collaborations with for-profit/commercial organisations are necessary, as deemed by the example of *SocialTechno* in Italy connecting the social economy with high-tech companies like Microsoft and Cisco.

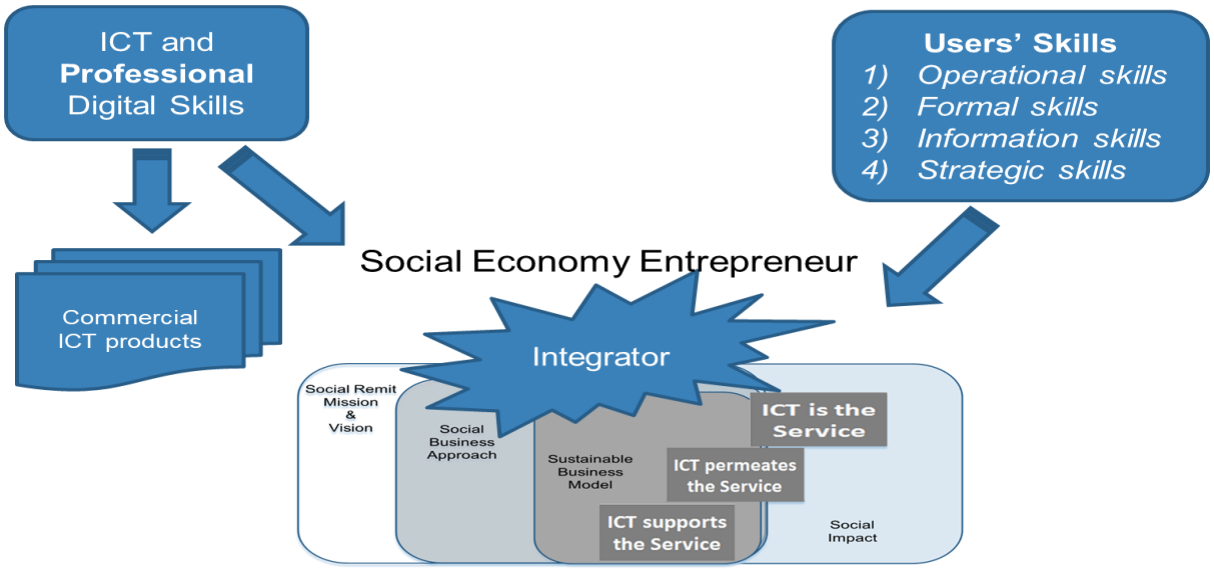
Focusing on the skills, it is worth reminding that the successful completion of a social economy enterprise digitalisation process is highly dependent on several types of digital skills. On the one hand we have the professional digital skills[85] necessary to design and develop the digital architecture of the technologies to be implemented within the organisation. Of course, these technologies may be outsourced. Nonetheless, they may need to be adapted and certainly maintained once integrated in the workflow. Up to this point we may observe that there is only a marginal difference between a social economy enterprise and a business-led enterprise. This may however be only superficial since the integration of digital technologies in the workflow is dependent on the digital strategy of the social

[85] Eurostat classifies professions in ICT for statistical purposes as 1) Development of web solutions; 2) Development of business management software and systems; 3) Support for web solutions; 4) Support for business management software and systems; 5) ICT security and data protection; 6) Maintenance of ICT Infrastructure and 7) Support for office software. However, industry-specific classification may be much more granular identifying for example specialists in system architecture, analysts, designers, developers.

economy entrepreneur which, as we have seen above, links the social mission and vision with an economic viable business model. This aspect is non-trivial, especially when we consider that **the competences of a social entrepreneur need to be effective in both domains: 1) the social/societal domain in order to carry out the social mission and vision and 2) possess business acumen, characteristic of for-profits enterprises, in order to achieve sustained economic viability.** Moreover, the integration of digital technologies requires that the social economy entrepreneur (and the executive team) has skills which span the technologies employed.

These observations are certainly relevant in understanding the parameters and the scope of the digital transformation of the social economy. We may need to highlights how the social entrepreneur sits amongst three very important aspects of a modern digital society and economy: the availability of ICT professionals with required digital skills for the design and implementation of specific technological tools[86], the skill set of users, beneficiaries and other stakeholders with whom the social economy organisation is set to interact, and the skills within the organisation necessary to run efficiently a digital social economy enterprise[87]. The skill sets are radically different from the professionals' identified above (Van Deursen et al., 2014; Van Dijk, 2005). In this context, the social entrepreneur acts as a 'integrator' by marshalling professional digital capabilities, designing a digital social enterprise that has the skills necessary to run operations smoothly and competently and, finally, that may interact successfully with users, beneficiaries and other stakeholders.

Figure 8: Skills requirements for the digital social economy enterprise



Source: own elaboration

2.2.3 Concluding remarks on digital technologies, social entrepreneurship and the social economy

In the previous sections we highlighted that digital technologies, properly integrated within the business model of the social economy, may provide great opportunities for achieving social impact, contribute to ensure economic sustainability of operations and, eventually, scale up and grow organically or scale out by replicating their social activities in other contexts.

[86] The Eurostat classification above gives a pretty good picture of the necessary skill set and professional figures required.

[87] Following Van Dijk (2005) and Van Deursen, Helsper, and Eynon (2014) we can identify four main skill–types:
1) Operational skills: the skills to operate digital media; 2) Formal skills: the skills to handle the special structures of digital media (such as menus and hyperlinks); 3) Information skills: the skills to search, select and evaluate information in digital media and 4) Strategic skills: the skills to employ the information contained in digital media as a means to reach a particular personal or professional goal.

Social economy enterprises relying fully on technological solutions may however find difficulties in adapting to a business model that supports their technological effort in providing social value and, at the same time, ensure a dependable stream of resources to keep operations viable. This may be due to the nature of the social challenge, the limitation of the technological solutions, or the need of integrating complementary offline activities. Let us consider the following three paradigmatic cases:

1) A digital social economy start-up setting up to operate a digital platform may bring an innovative value proposition. However, the main hurdle may be set right at the starting line. It consists in marshalling enough resources for setting up operations. In an economy with scarcity of start-up capital and finance, a digital social economy start-up is competing in a disadvantaged position with a tech start-up which, overall, may promise its backers bigger returns on their investments.

   This element alone may pose high entry barriers to the digital social economy business models. Preferential investments opportunities are emerging. Crowdfunding for the social economy, for example, provide a digital platform whereby start-up can i) test their social venture idea with an audience wider than that of the entrepreneur (and the management team) and eventually ii) marshal enough resources to start-up operations.

   Other means facilitating digital social economy start-ups in a number of high-tech sectors may be increasingly found in the availability of **incubation space at more forward-looking entrepreneurial universities or science parks**. The University of Manchester (UK), for example, in its large incubator and Science Park, is supporting and coaching several high-tech social economy start-ups engaged in blockchain, IoT for health and social care amongst others. The Dutch Digital Society research programme, whereby a group of 30 professors from 14 universities sets out to address the issues of the digital transformation of the social economy, gives a more scaled up approach. In particular, it is looking into supporting the Netherlands to develop new technologies and applications to serve social goals and interests.

2) A fully digital social economy enterprise operating entirely through platform technologies and interactive digital applications may need to rely on contracts drawn 'offline' with local organisations (either governmental, educational and health provider organisations) to accrue dependable sources of income. This challenge may be overcome by siding the technological strategy with traditional business practices.

3) A social economy organisation may only operate successfully if it meets the needs of users, members or beneficiaries in personal, face-to-face relationships. The challenges to digitalisation may be overcome by designing and/or adapting digital solutions to support the internal organisation which enables the blending of technology-based organisational arrangements and personal/individualised approaches with the end users.

In relation to the growth strategies, examples 2) and 3) provided above suggest valuable lessons regarding opportunities for scaling up or for scaling out/replicating. In fact, in case 2) using off-line contracting with commissioning authorities and local government agencies provides valuable opportunities to extend the reach of the activities carried out through the digital platform. On case 3) instead, an efficient and effective digital organisational arrangement may be replicated in other initiatives whilst the contact with local communities may be undertaken more effectively through face-to-face interaction by local chapters.

The emerging narrative aligns with the idea that technological support and operand/operant use of the digital solutions needs to be able to accommodate several necessary steps to move the social venture towards economic sustainability. First, it is important to recognise that digital social economy start-ups may be at a disadvantage compared to for-profit start-ups. **Specific investments channels (social financing[88]) and support measures (including coaching[89]) are necessary**

[88] Social investment/financing consists in lending or investing in socially – driven enterprises such as charities, social enterprises or cooperatives. Social financing and investing are not donations therefore lending is expected to be repaid with interests and investing to provide returns.

[89] Coaching is extremely important for start-ups and social start-ups particularly. As discussed later on in chapter 5, several coaching options are discussed, and policy implications drawn.

in order to favour the initial phase. Second, **the technology must be fit for purpose**, this means that digital solutions should be either tailored or adapted to the task they are set to perform. Finally, the integration of the technology within the operations of a social economy enterprise should be **matched by an appropriate business model**, which can facilitate the creation of social value and assure continuity of the venture and eventually growth.

We found that considering long term business sustainability vis-à-vis business model innovation is a recurrent challenge for social economy enterprises. In particular, technological solutions are targeted and tailored to the technological needs of the social economy to enact its outreach strategies. Technological appropriateness emerges as a critical element: social economy enterprises are relying on tried and tested, stable technologies to carry out their (digital) strategy and eventually adapted or re-developed to match requirements.

Appropriate technologies must also **match social enterprises' skills with the capabilities (and skills) of the users** (be they members, beneficiaries or relational partners). This process consists in searching and implementing value creation operations which i) require both specific and general technological skills; ii) entrepreneurial capabilities focusing on the social, economic and governance aspects of the social economy and iii) the capacity to integrate technological skills and socially-oriented entrepreneurial capabilities. These aspects are particular important when considering that the activities of the social economy target social/societal challenges and are often directed at individuals with specific needs and interests. These activities may not always be freely tradable on the market or at market conditions.

3 TECHNOLOGY SPECIFIC ANALYSIS: DIGITAL SOCIAL ECONOMY PLATFORMS

3.1 State of the art

Digital platforms and their respective ecosystems "*…already dominate our daily lives and our experiences as consumers, employees, community members and citizens"* (Jacobides, Sundararajan, & Alstyne, 2019). Current availability and convergence of low-price/affordable digital technologies is enabling companies of all sizes, sectors, missions and visions to exploit mobile, data and analytics to redesign their business models.

From a technological perspective, digital platforms connotate the combination of hard infrastructures – a set of 'core' components with low variety, i.e. an Application Programming Interface (API) and servers – with soft infrastructures – 'peripheral' components of high variety, i.e. the service applications (Saarikko, 2015; Yoo, Henfridsson, & Lyytinen, 2010). From an entrepreneurial perspective, digital platforms refer to the "*markets where users' interactions with each other are subject to network effects and are facilitated by a common platform provided by one or more intermediaries*" (Eisenmann, Parker, & Van Alstyne, 2011).

In the context of the social economy digital platforms are used as intermediary platforms putting a significant number people offering goods or services in touch with a significant number of users, aiming to make better use of goods and services by sharing them and with the final parties to these complex three-way transactions being primarily peers (P2P) that are not part of a business to customer (B2C) contractual relationship (Chaves & Monzón, 2017; EU Commission, 2016a). Accordingly, in the current study we refer to the digital platforms used for social economy purposes as

> **Digital social economy platforms**, ecosystems organised around a digital platform within which different social economy actors (producers, users, related supporting service providers) can create and combine flexibly their offerings (services, products).

To facilitate our research on digital social economy platforms, we aimed to devise a typology (Table 1) to organise the plethora of digital platforms into a lesser number of classes/dimensions/elements that share key attributes. The typology aims to serve as a "heuristic device", representing concepts and dimensions of an ideal platform rather than something that is necessarily found in empirical reality (Howcroft & Bergvall-Kåreborn, 2019; Weber, 1949). To formulate our typology, we relied on digital platform research (Acquier, Daudigeos, & Pinkse, 2017; Botsman, 2013; Boudreau, 2010; Cennamo & Santalo, 2013; Codagnone & Martens, 2016; Cohen, Nelson, & Walsh, 2000; Eurofound, 2019; Evans, 2003; Evans & Schmalensee, 2008; Farrell & Greig, 2016; Gawer, 2009, 2014; Gawer & Cusumano, 2014; Hagiu & Wright, 2011; Kenney & Zysman, 2015; Scholz, 2016), and we proceeded by identifying how it is used in the context of social economy.

Table 1: Digital social economy platforms typology

Architectural element	Types of Digital social Economy Platforms
Technological architecture	**Closed platforms** are used by social economy enterprises when the information exchanged and/or stored needs to comply to certain disclosure criteria. Such platforms are used for example in the cases of minors or when health data need to be used. **Open platforms** are used by social economy actors when peer-to-peer interactions are needed for the provision of social services of general interest. Such platforms are used for example for connecting teachers among them or offering support services to elder people.
Transaction model	In the context of the social economy, the digital social economy **transaction models** focus on the social dynamics of sharing and collaborating with stakeholders, users and beneficiaries and other entities with which similar principles and values are shared. Digital social economy platforms allow peer-to-peer transactions of goods, services

	and contents (including information), allowing intermediaries to connect providers with users and facilitating transactions between them.
Types of goods / contents exchanged	Digital social economy platforms facilitate the exchange and offering of goods (**capital platforms**) and/or may support the exchange of services, contents and (build) relations with beneficiaries, stakeholders, users or other entities (**services platforms**).
Design & Governance	The governance of digital social economy platforms is stipulated by a partitioning of **decision rights** among the owner(s) of the platform and a shared ownership structure through, for example, shared values. The governance mechanisms aim to balance stakeholder interests via redistribution (also noted in the literature as 'platform cooperativism'[90]) or by orienting the purpose of the platform towards the community interests and increasing the community/end-users well-being (noted in the literature as 'mission-driven platforms'). The **control mechanisms** tend to be informal. Power may be centralized with platform controlling the locus of transactions and separating buyers or users from providers and providers from buyers, or may be decentralized diffusing power over content, as in the cases of open content platforms. The **ownership** of the platform, of the content generated, and of the profits produced are shared democratically; thus is stipulated by the owners and the users themselves, giving rise to new models of ownership such as commons, peer-to-peer, community-based crowdfunding platforms.
Value (co-)creation	In **"internal"** digital social economy platforms the content generated and offered by the social economy enterprise involves only peers. In these platforms, all platform participants (social economy enterprise, ecosystem of network members) co-create the value of the platform. An example of an internal platform is a peer-to-peer platform. In **"supply chain"** platforms, the social economy enterprise collaborates with peers and stakeholders, existent within its own ecosystem. Such a type of platform is the commons platforms. **"Industry"** platforms support the collaboration with peers or others, external to its own ecosystem. Usual types of such platforms are crowd-based/crowdfunding platforms.
Services offered	**Two-sided digital social economy platforms** connect third-party suppliers (developers) to users (e.g. consumers) directly, with the main objective being the maximisation of network effects and minimisation of entry barriers (for example through the design and architecture of the platform). This is the most usual type of platform, connecting end-users with the providers of the services, contents, goods. **Multi-sided platforms** extend the characteristics of two-sided platforms by involving intermediaries and therefore increase the variety of products/services offered and these may be tailored to customers' specific needs.
Outcomes & Impacts	In the context of the social economy, the use of digital platforms is primarily for achieving more/better **social and societal impacts**. They are also used for **improving economic sustainability** through increasing market and community reach within local context but also beyond geographic boundaries, to people having similar needs.

Source: own elaboration

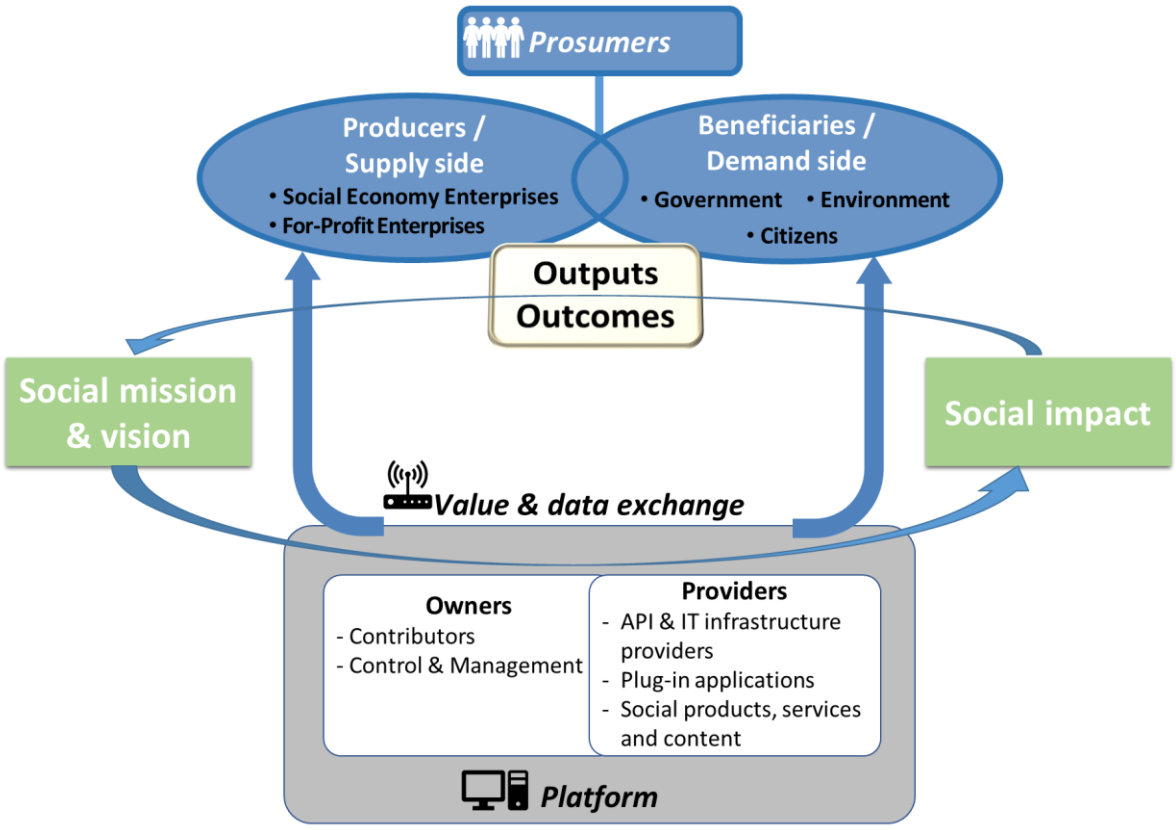
The use of technologies has not only affected the way goods, services and content are exchanged or the connection between actors, but has also affected the means through which support is sought and

[90] For further information, e.g. https://wiki.p2pfoundation.net/Platform_Cooperativism and https://platform.coop/

provided. The new forms of tailored funding recently used also by social economy enterprises are **crowdfunding and crowdsourcing**, facilitated by digital platforms. (Social) **Crowdfunding** denotes any initiative in which an individual raises capital by asking a 'crowd' of people to make small to medium-sized investment in a (social) project or (a social) start-up business (Richter, Kraus, Brem, Durst, & Giselbrecht, 2017). **Crowdsourcing** is a type of online and participative activity in which an individual, an institution, a non-profit organisation or a company (for-profit or social) proposes the voluntary undertaking of tasks. The crowd can participate by providing work, money, knowledge and/or experience (Estellés-Arolas & González-Ladrón-de-Guevara, 2012). Overall, improving our knowledge of crowdfunding and crowdsourcing is important for the digitalisation of social entrepreneurship, as traditional means of finance have proven subpar to traditional funding means and often even inadequate (Agrawal, Catalini, & Goldfarb, 2010; Brown & Murphy, 2003); (Fedele & Miniaci, 2010); (Ridley-Duff, 2010)).

Based on the typology we developed above, the key features of digital social economy platforms involve: the *owners* of platforms controlling (intellectual) property and governance, the *providers* offering the technological elements and/or the social services through which platforms interface with users/beneficiaries, the *producers* creating the offerings, and the *demand side (*Figure 9*)*. In particular, the providers and owners of the platforms may be interconnected or even be the same organisation. At the intersection of producers and beneficiaries we find *prosumers*, i.e. customers co-creating value and buyers who produce products for their own consumption (Xie, Bagozzi, & Troye, 2008). This form of interaction is currently gaining momentum, particularly in energy related social economy ventures.

Figure 9: Digital social economy platform ecosystem



Source: own elaboration

The digital platform ecosystem permits and facilitates the exchange of data and values between the players involved, resulting in the production and transactions necessary for achieving the social impact envisaged. The feedback loop between social impact and social mission and vision signals the tension between the bottom-lines aim of the social economy: on the one hand to achieve sustainable

socio-economic-environmental outcomes and impacts through the identification and exploitation of the competitive advantage, and on the other, the bidding to collaborate with complementors and incumbents to extend the reach of the social impacts. In fact, citizens, government and the environment constitute the tripartite demand side configuring the demand for social products, services, contents and relations. Nevertheless, it is important to develop this relationship into an operational strategy, allowing the demand side to have an active role in the formulation of the social economy and the operation of digital social economy platforms.

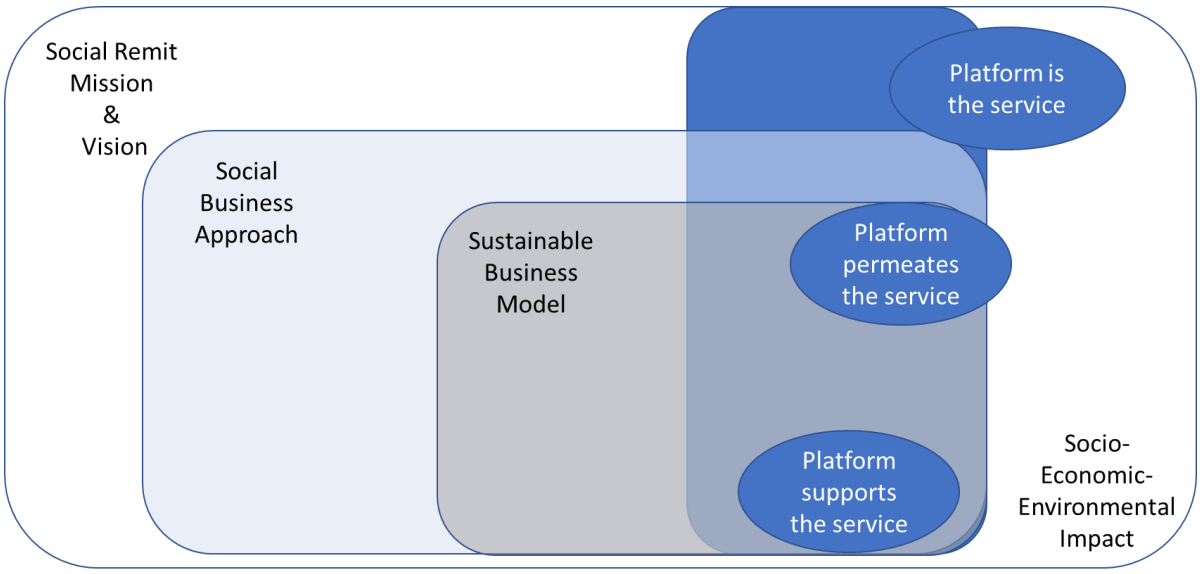
In the context of our conceptual framework, the social economy often uses most tried and tested, stable and commercially available platform technologies to serve their missions, visions and impacts (facilitators of the social economy enterprise's activities – e.g. a CRM technology or a labour-matching technology. In such cases, platforms are auxiliary and supportive to the missions of the social economy enterprises;

- **Saturators** of the social economy enterprise – the platform is integrated in the organisation's activities but needs to be complemented by other supportive technologies, (i.e. AI or big data) to be fully functional; or
- the **social economy enterprise is only functional and existent via the use of its digital platform.** The social economy enterprise's mission and vision are fully served by platforms. In these cases, the missions and visions of the social economy enterprises can only be achieved because operations are carried out though platform technologies. The technology allows them to connect with beneficiaries and providers and are used as means to receive payments or provide other complementary and ancillary services, thus completing the business model.

Figure 10). Thus, platforms are used as:

- **facilitators** of the social economy enterprise's activities – e.g. a CRM technology or a labour-matching technology. In such cases, platforms are auxiliary and supportive to the missions of the social economy enterprises;
- **Saturators** of the social economy enterprise – the platform is integrated in the organisation's activities but needs to be complemented by other supportive technologies, (i.e. AI or big data) to be fully functional; or
- the **social economy enterprise is only functional and existent via the use of its digital platform.** The social economy enterprise's mission and vision are fully served by platforms. In these cases, the missions and visions of the social economy enterprises can only be achieved because operations are carried out though platform technologies. The technology allows them to connect with beneficiaries and providers and are used as means to receive payments or provide other complementary and ancillary services, thus completing the business model.

Figure 10: Operationalisation of digital platforms in the context of social economy



Source: own elaboration

In the next section we discuss how the different initiatives identified and explored in the context of this have up-taken, used and integrated digital platform technologies and how this process has affected their internal operations and contributed to social/societal impact, based on the conceptual framework developed in section 2.2.1 of this report.

3.2 Contribution of digital platforms on social economy impact

The importance of exploring this aspect of the social economy is vital as digital platforms radically change the ways we work, socialise, create value and compete for the resulting profits. This digitally based new economy has been given a variety of names derived from some of its perceived attributes: its advocates refer to it as the 'Creative', the 'Collaborative economy' or the 'Sharing Economy'[91] while those less convinced have dubbed it as the 'Gig Economy', the 'Precariat' or the '1099 Economy', focusing mainly on its impact on workers.

What we have aimed to highlight through this study – and in particular all thirteen digital social economy platform cases identified in the four countries covered (Greece, Italy, The Netherlands and the UK) – *is how platform technologies are positioned within social enterprises and social economy,*

[91] As stated in EESC's 2016 Opinion on the Sharing Economy and Self-Regulation (INT/779) as well as on https://ec.europa.eu/growth/single-market/services/collaborative-economy_en the terms 'Sharing' and 'Collaborative' economy are used interchangeably, as synonyms in EC documents, focusing more on the benefits for stakeholders (consumers and workers) and on their impact in terms of productivity and sustainability.
In the "European agenda for the collaborative economy" (COM(2016) 356 final) Collaborative economy is define as:
…[the] business models where activities are facilitated by collaborative platforms that create an open marketplace for the temporary usage of goods or services often provided by private individuals. The collaborative economy involves three categories of actors: (i) service providers who share assets, resources, time and/or skills — these can be private individuals offering services on an occasional basis ('peers') or service providers acting in their professional capacity ("professional services providers"); (ii) users of these; and (iii) intermediaries that connect — via an online platform — providers with users and that facilitate transactions between them ('collaborative platforms'). Collaborative economy transactions generally do not involve a change of ownership and can be carried out for profit or not-for-profit.

With respect to the definition of the 'Sharing economy' the EESC has used the definition of *Botsman & Rogers, 2010* according to which *sharing economy* is an *"economic system based on sharing underused assets or services, for free or for a fee, directly from individuals" using online platforms , although a more precise analytical distinction concerning the concept of "sharing", i.e. "non-profit", and the use of platforms might help to better inform policy and develop more appropriate regulation." {Committee, 2016 #17)}*.

if they have a chief role in the provision of social services and whether there is a substitution of public services by social enterprises for ancillary services.

3.2.1 Social economy and digital platforms: role, interactions and social impacts

The role and importance of digital platforms in the current socioeconomic landscape is unquestionable: they support new ways of interacting and mediating co-creation within communities, allow ordinary citizens to share resources in the sharing economy, facilitate the creation of communities of interest around social and environmental challenges, etc. It is possible, however, that equity gains resulting from all such sharing activities are not necessarily shared (Morozov, 2016). Examples can be found for banking and revolutionary e-business aspects (Liu, 2017), social media supporting democracy, creating wealth, employment, jobs and political changes (Fuchs, 2017), as well as for consumer to consumer breakthroughs such as Airbnb (Oskam & Boswijk, 2016).

Through our case studies we identified that digital platforms are used to **disrupt long-established systems**, such as banking and energy production and distribution, to facilitate outreach towards beneficiaries who otherwise may not reached (or could be reached but to a lesser extent). Digital social economy platforms aim to disrupt the way economic systems control and manage hierarchies, capture value and organise economic activity. This happens by resetting entry barriers, changing the logic of value creation and value capture, adjusting regulatory arbitrage, repackaging work, or repositioning power in the economic system (Kenney & Zysman, 2016).

TEM

TEM (Τοπική Εναλλακτική Μονάδα – Local Alternative Unit) is a local exchange trading system (LETS) operating via an open-source online platform (cyclos) bringing the city's people together and allowing them to engage in alternative economic activities. TEM was launched during the enforcement of capital controls by the Greek government, as means to allow people to exchange goods, products and services through the use of an alternative currency (TEM). Between 2010 and today, TEM achieved transactions of more than 650.000 TEMs (Euros), denoting its wide uptake and use by the locals; most importantly, TEM is the only LETS still operational in the country.

ENERGIA POSITIVA

Energia Positiva, through its online platform https://www.energia-positiva.it issues shares corresponding to real portions of different renewable energy production plants (photovoltaic, hydroelectric and wind plants) it owns across Italy, letting members subscribe and create their "virtual" plant; consequentially, to become energy prosumers. To date, through the platform they have managed to collect almost €5 million in capital, more than €310,000 in paid bills and 1.6 GWh of annual energy production.

Platforms are also used as means of offer of **ancillary public services to beneficiaries**:

Xenzone

Xenzone is a pioneer in online counselling in the UK: over 250,000 people have used or are using their services to date. In particular, Kooth – one of Xenzone's services – is accessed by over half of all 11-18 year-olds in the country.

digitalAngel

digitalAngel's vision is to become the central IoT healthcare hub across Europe for any medical device maker and healthcare provider, making it easy to connect to any device and bring that data into any application or database for building new tools and services. The ultimate goal is to

use such IoT data to automate tasks for improving care while lowering healthcare costs.[92]

Digital platforms facilitate also the commodification of knowledge through use of local communities. The digital social economy platforms assist towards the provision of better social services to a larger audience, through the establishment of a close network of collaborators, including other non-digital social economy enterprises (operating in the same geographic area or in the same service area yet in different geographic locus), volunteers, "workateers"[93], technology providers, educational institutes and others through which they obtain timely ground-level data, input, information, contacts, etc., essential for the successful provision of their services and simultaneously difficult and usually too expensive to collect, transfer, and use (Prodanov, 2018).

Centrepoint

Centrepoint aims to address the big issue of homelessness through the use of Big Data, bringing together all the information available to build the clearest picture possible. Currently, in the country, there is no official data on the scale of youth homelessness either on a national or local level. This information is crucial to ending youth homelessness. To this end, Centrepoint relies upon the timely provision of relevant information from volunteers, other social economy enterprises, governmental depts, etc., in the area. This is primarily important as in April 2018 the Homelessness Reduction Act came into force, compelling local authorities to prevent and relieve homelessness for all eligible young people. The Act has the potential to save lives, but it also implies a huge increase in the work for local authorities. Thus, Centrepoint – and its likewise initiatives – is a significant contributor to this end.

Digital platforms allow the social economy enterprises to connect with individuals and organisations with which they **share common interests, values, missions** (usually spurring from local situations), **and not necessarily geographical proximity**.

SocialTechno

SocialTechno establishes synergies between international for-profit IT enterprises, like Microsoft, Cisco, Symantec, Google and Autodesk with Italian social economy actors. Currently, several local social economy organisations, such as Sant'Egidio Community, AVSI international and Arca Project are served by SocialTechno and have access to Microsoft technology including Office 365, Sharepoint, and CRM.

FLOOW2

FLOOW2 is a circular economy industry platform that enables companies, organisations, and government agencies to make use of overcapacity of idle assets, such as equipment, waste, materials, and services as well as make the knowledge and skills of their personnel transparent and tradeable. They work together with several business partners around the world, from the UK, Belgium and Australia to Nigeria, Georgia and Scandinavia. Currently, FLOOW2 has 35.000 users, 30 internal sharing marketplaces and 15.000 advertisements of idle assets on global scale.

3.2.2 Digital platforms impact on labour and skills

Digital platforms rely on a workforce of independent 'virtual' contributors who work on their own account and usually for small fees, often without social security. Worker protection, health and safety,

[92] Source: https://dutchitawards.nl/4236/digitalangel-case-study-final.pdf
[93] Workateers: people at the intersection between volunteers, employees and salaried workers.

quality of work and social security contributions mostly fall to the responsibility of the independent contributors.

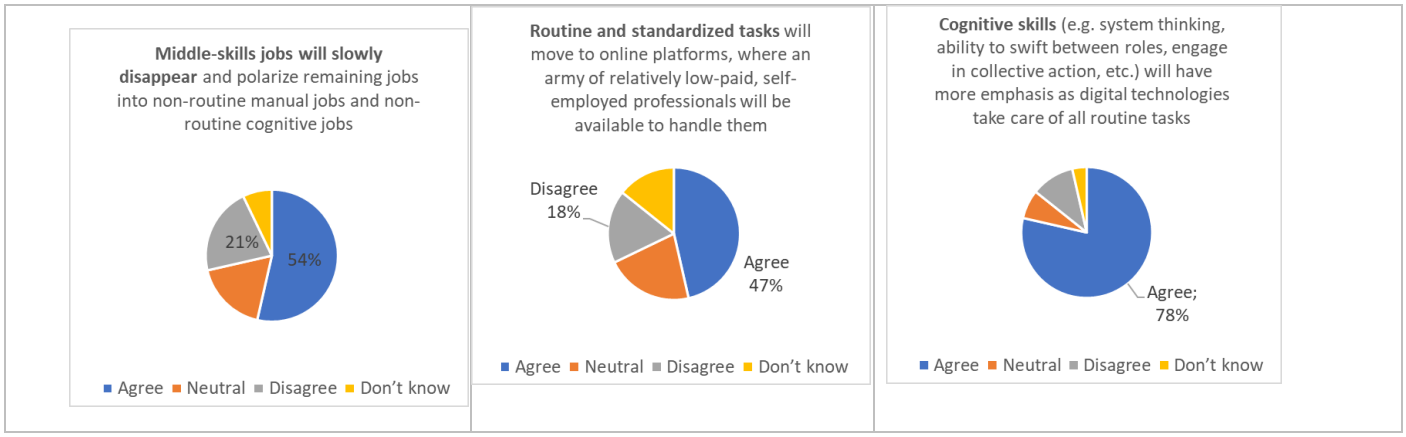
How many people work on or via digital platforms? According to the 2016 Eurobarometer survey (European Commission, 2016b), only 5% of Europe's workers regularly offer their services or perform their work via platforms. The JRC's COLLEEM study, covering half of the EU countries, reports that the share of adult internet users that have provided labour services via platforms ranges from nearly 16% in Portugal to about 7% in Finland (Pesole, Brancati, Fernández-Macías, Biagi, & González Vázquez, 2018). Huws, Spencer, and Joyce (2016) highlight that a sizable minority of more than a million workers in the EU rely on platforms mediated work as their main source of income.

The transformative labour effects of digital platforms concern **work practices** – as technology enables the diffusion of atypical work practices – as well as the creation of **new forms of work**, including on-call / on-demand casual work, employee or job-sharing and mobile work (Drahokoupil & Fabo, 2016; Drahokoupil & Jepsen, 2017; Eurofound, 2015; Valenduc & Vendramin, 2016), remote provision of services (virtual or crowdwork), and the offshoring of work from local labour markets (Berg, 2015; Ipeirotis, 2010; Maselli & Fabo, 2015). Although some of the changes may be positive (i.e. flexibility and a better work- life balance), they also contribute to job polarisation (Borzaga et al., 2019) and the casualisation of the labour market.

Platforms also have an impact on the **employment levels of skilled people**. Acemoglu and Restrepo (2017) identified that investments in digitisation are associated to increased employment of high-skilled labour whereas low- and medium-skilled labour tends to decline or remain unaffected. According to the research of Codagnone, Abadie, and Biagi (2016) low-skilled, physical (location-based) tasks such as driving, housework, delivery are more and more arranged through digital platforms, while more skilled tasks (such as tutoring) are very often not taken up by prospective customers (De Groen, Maselli, & Fabo, 2016). According to the ILO, a large part of the new demand for labour that could compensate for job loss is expected to emerge in the sectors of social, personal and general interest services, which have, until now, largely been provided in informal ways by households, voluntary organisations and (only partially and in a few countries) by public institutions (International Labour Office, 2016). These findings are partially supported by our forward-looking exercise (Figure 11), in which approximately half of the interviewed future-looking experts[94] agreed that routine and standardised tasks will move to online platforms where an "army" of relatively low-paid, self-employed professionals will be available to handle them. Moreover, half of the experts (54%) indicated that middle-skills jobs will slowly disappear polarising remaining jobs into non-routine manual jobs and non-routine cognitive jobs. At the same time, almost four out of five experts agreed that more emphasis will be placed on skills, such as system thinking, ability to shift between roles and engage in collective action to manage complexity.

[94] In the context of the present study, a forward-looking exercise was conducted with digital and social economy experts across Europe. The survey aimed at exploring which digital technologies may act as enablers of social economy, what new social economy business models may emerge, how 'tech-for-society' may evolve, and what could be the impact of digital technologies on social economy, employment and skills in the next 15 years. For methodological information please see Chapter 1, while for details on the questions asked and the responses of experts please refer to Annex III.

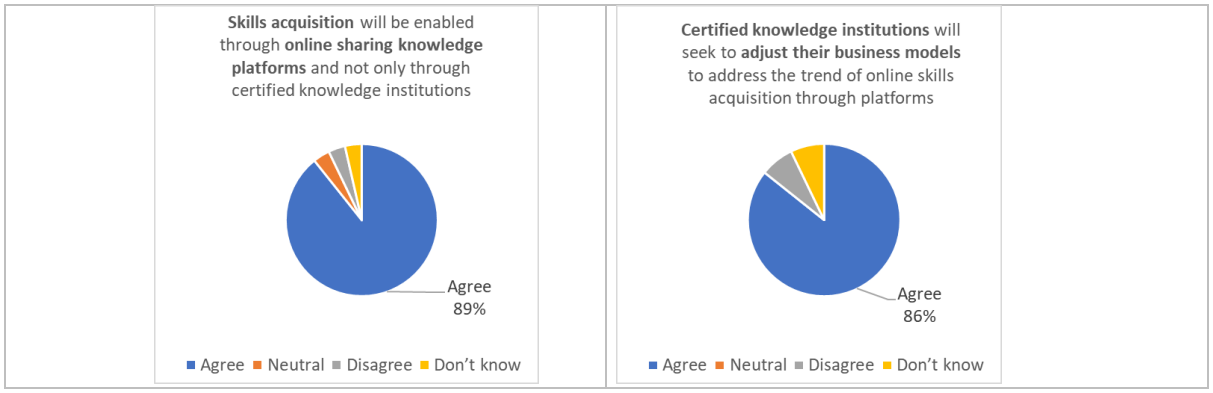
Figure 11: Skills and tasks allocation in the course of a future (digitalised?) social economy?



Source: own elaboration

The use of new technologies calls for new competences, and thus new types of education and training, that will help people combine the functions performed by technologies with needed human skills. According to our forward-looking exercise (Figure 12) by 2035 skills acquisition will be enabled through online sharing knowledge platforms and not only through certified knowledge institutions (89% of experts agreed to the point) and that certified knowledge institutions will be seeking to adjust their business models to address this trend (86% of experts).

Figure 12: Evolution of skills acquisition and consequent impact on knowledge institutions business model?



Source: own elaboration

Overall, these transformations in the world of work have brought increased attention to the social economy as some of the characteristics of social economy enterprises make them particularly suited to create more flexible forms of employment that give the workers more power to decide how to organise their jobs, and to lower the cost of production through the involvement of users and volunteers. In other words, the social economy appears equipped to help turning the challenges described above into opportunities to improve living standards and quality of life (Borzaga et al., 2019). This point is also supported by Dachs (2017) who stated that the social economy is anticipated to be one of the sectors least affected by the expected job-destroying effects of digitisation. The principal argument is that social economy enterprises - in contrast to commercial ones - are active in sectors involving non-routine activities that require a great deal of human interaction, such as social assistance services, education, work integration, culture, or health services. In this case, (digital) technologies have an enhancing, rather than displacing, role in the future. In the cases where social economy enterprises employ vulnerable people, who are undertaking usually routine occupations,

they may be in some danger as digitisation can make this particular part of their activities more difficult/costly.[95]

Overall, this interaction between the social and the digital "…*may therefore open Social Economy organisations to many of the new forms of innovation described by Leitner K. et al., 2012 such as Innovation Communities, Crowd sourcing, User Innovation or Open Innovation*". The research of Dachs is also supported by recent evidence: according to Borzaga et al. (2019), the social economy already plays an important role in preserving and creating new employment. Social economy enterprises appear to be well suited to provide employment infrastructure that combine the need to coordinate complex forms of decentralisation of the production process and the need for more security for workers, by resorting to networked collaboration models. This role can be increased through the potentials offered by digital technologies, and platforms in particular, in opening new markets and collaborations with peers.

Such is the case of **platform cooperatives** (Sutton, Johnson, & Gorenflo, 2016; Pazaitis, De Filippi, & Kostakis, 2017), currently on the rise globally. Platform cooperatives are digital (labour) platforms controlled by (online) workers that allow the organisation of productive effort to have sustainable livelihoods[96]. According to Scholz (2016), platform cooperatives aim to redesign the ownership and relational dynamics of platforms, placing democratic governance, solidarity and social benefit at the epicentre. Inspired by the commons and the solidarity economy movements, platform cooperatives intent to create an enabling environment for workers to mutualise resources and make positive contributions to the commons and more widely to society.[97] The concept of platform cooperativism is composed of three key elements (Scholz, 2016):

- The ICT element: coop platforms aim to replicate the technological "heart" of Uber, TaskRabbit, Airbnb, or UpWork. They foresee to embrace the technological aspects of platforms while ensuring that it appropriately integrates a democratic ownership model and adhering to the democratic values served by the social enterprise. "*It is in this sense that platform cooperativism is about structural change, a change of ownership*".
- The social element: coop platforms primary concern – like all other social endeavours – is the promotion of their social mission and vision, i.e. the empowerment of solidarity among the workforce involved in it. Cooperative platforms are owned and operated by organised unions or any other group of people, ranging from multi-stakeholder and worker-owned co-ops (e.g. Mensakas SCCL[98] in Spain is a courier cooperative born out of the RidersxDerechos movememn, creted by ex-couriers working for Uber, Deliveroo and others that united to promote their working rights) to producer-owned platform cooperatives (e.g. Fairmondo[99] is an online-marketplace owned by its users).
- The sustainability element: platform cooperativism is built on the reframing of concepts of innovation and efficiency aiming to benefit all those involved in its operation.

The social economy is also characterised by a strong presence of women: for instance, the share of female workers in the social economy is of 70% in Belgium and 67% in France (Borzaga et al., 2019). The large presence of women in the social economy labour force is partly due to the willingness of social economy enterprises to provide flexible and part-time employment, which can be more easily

[95] An indicative case involves the food delivery platform Deliveroo, which employed workers through the intermediary platform SMart – a workers' cooperative (Drahokoupil & Piasna, 2019; Kilhoffer & Lenaerts, 2017). Deliveroo agreed to collaborate with SMart for the employment of workers and entered into a enter contractual agreement so as to be able to access student workforce and also benefit from respective tax incentives. Despite criticisms of the SMart system for normalising precarious work, it did give workers protections that they valued, most notably income security.

[96] For a discussion of a legislative framework needed to sustain collaborative platforms. See (Smichowski, 2016) and (Bloemen & Hammerstein, 2015)

[97] For an extensive overview of platform cooperativism see Scholz and Schneider (2017), and online sources are https://blog.p2pfoundation.net/tag/platform-cooperativism and https://platform.coop/

[98] https://www.mensakas.com/

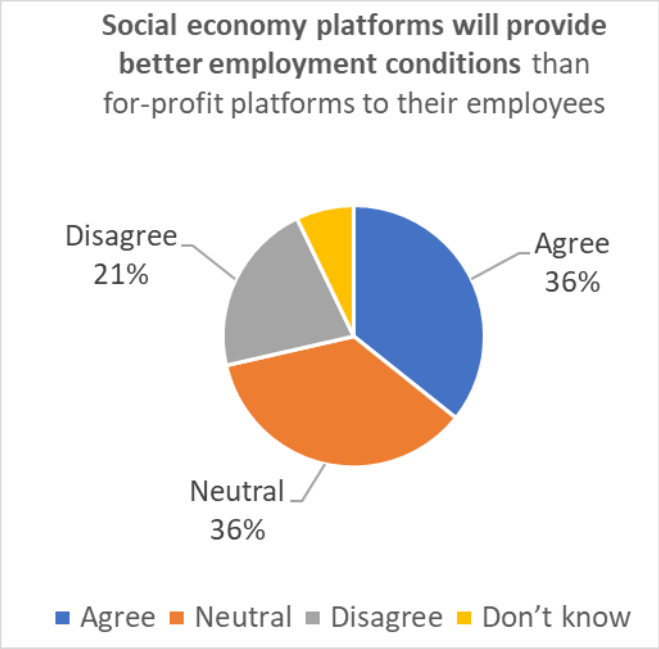
[99] https://www.fairmondo.de

reconciled with the responsibilities of unpaid care work with which women are often burdened (United Nations 2014). Codagnone et al. (2016) and Dettling (2017) point out that digital platforms help women to overcome cultural barriers related to labour market exclusion in certain areas, allow stay-at-home mothers to work and monetise their free time, thus can constitute a crucial element in the further improvement of women's participation in labour markets.

It is evident that digital social economy platforms have a completely different positioning than their commercial counterparts, mainly driven by the social economy's underlying values, social impact orientation, participatory governance systems, and adoption of ethical business models. Digital social economy platforms are used as vehicles for empowering their users (both workers and customers/beneficiaries) to live in a more sustainable way, respect women's employment specificities (Codagnone et al., 2016; United Nations, 2014; Dettling 2017) while fostering social capital development and the promotion of socially beneficial values in communities (Foden, 2012; Schor, 2014; Sundararajan, 2016). Platforms also provide an opportunity for workers who would otherwise be excluded from the labour market to perform working tasks as well as participate in the management and governance of the platforms, thus fuelling their confidence. In the context of our study, we also identified that all interviewed social economy enterprises using digital platforms, the working conditions were humane and the remuneration of the people employed by the platforms was towards the provision of living wages rather than minimum wages, in some cases against the social economy enterprises sustainability.

Digital social economy platforms may provide 'future-proofed' job opportunities that contribute to wealth redistribution and curtail job insecurity to workers engaged in social professions that may be affected by the dynamics of the 'gig economy'. This may be translated as new ways of organising work and workers beyond the structure of traditional enterprises in order to increase their market power. It also points to new opportunities for development in the field of personal and social services in a broad and evolutionary sense, including for instance the 'care economy' – a sector where the challenge is to combine the broad relevance of jobs to social issues with better income distribution and standards of living in today's ageing society. The 'care economy' is not the only one in which the social economy can fulfil its developmental potential. The creative and cultural industry, which represents another growing sector in terms of occupation affected by the gig economy, is also fertile ground for the adoption of social economy models that can empower workers and provide more security. Despite the positive connotations associated with this trajectory, the future-looking experts consulted in our study were sceptical about the future. As depicted in Figure 13, around one third of the experts agreed that in the next 15 years digital social economy platforms will provide better employment conditions, while almost half (43%) were neutral or uncertain of how it may evolve.

Figure 13: What future for employment conditions in social economy and for-profit platforms?



Concluding, the net outcome between jobs created and destroyed will be shaped by the choices on technology deployment that translate entrepreneurial initiatives, corporate strategies and public policies into social and economic impact. With respect to the role of digital technologies in this equation, further research is highly needed.

3.2.3 Framing and regulating digital platforms

According to the European Commission's 2015 Communication on Digital Single Market (European Commission, 2015) "[…] *platforms have proven to be innovators in the digital economy, helping smaller businesses to move online and reach new markets. New platforms in mobility services, tourism, music, audio-visual, education, finance, accommodation and recruitment have rapidly and profoundly challenged traditional business models and have grown exponentially. The rise of the sharing economy also offers opportunities for increased efficiency, growth and jobs, through improved consumer choice,* ***but also potentially raises new regulatory questions****"*. The Communication raises questions regarding the challenges posed by digital platforms to existing laws (data protection, labour law, competition law, copyright) and authorities (competition authorities, data protection authorities, judiciary), as they tend to operate in new and untested territories (Alain Strowel & Vergote, 2018).

One of the most important challenges regulators face concerns the **lack of a social insurance framework on European level**. Fabo, Karanovic, and Dukova (2017) argue that the situation for platform workers is '*reminiscent of 19th century laissez-faire capitalism'*. Low pay and, somewhat paradoxically, a lack of control over working time are by far the top grievances of platform workers both in Europe as well as in the Global South (Drahokoupil & Jepsen, 2017). According to a case between a gig-economy platform – Deliveroo – and a workers' cooperative platform – SMart – revealed that there is significant "*difficulty of organising collective representation in this segment of platform work. The high workforce turnover combined with the temporary nature of this type of work gives little incentives to workers for investing into efforts to improve their working conditions and pay. At the same time, the protection that the workers need and desire can be delivered by a strong regulatory framework, including a tax system that gives the right incentives to the platforms*" (Drahokoupil & Piasna, 2019, pp.39-40). To date, regulation in this area has been concentrated around:

(i) **working terms between employees and enterprises** (Garben, 2017) – a rather complex issue, since many workers are self-employed and therefore lack an official employment contract.

Increasingly we have come to understand that for those registered as self-employed while following enterprises working hours and tasks sequencing may be necessary a new regulatory framework[100];

(ii) **variation of salaries** – reflecting the heterogeneity of platform work with many platform employees earning very low wages, frequently well below national minimum wages (CIPD, 2017);

(iii) the **health and safety** of employees;

(iv) the **working hours** (Quinlan, 2015); and

(v) the implications for national labour law in global platforms.

Mutuals may be supportive in addressing the challenge of social security and insurance as they are a significant actor in the social insurance field. They provide social coverage and other types of insurance to a significant proportion of European citizens: they provide healthcare and social services to around 230 million European citizens, represent more than 180 billion euros in insurance premiums and employ around 350,000 people in Europe (Grijpstra, Broek, Buiskool, & Plooij, 2011).

The role mutuals play in social protection systems varies widely across Europe, mainly due to historical, cultural and political developments: in Greece, mutuals are only active in compulsory health insurance, while in the Netherlands mutuals provide services in both the compulsory and the voluntary health insurance sector. In Italy and the UK mutuals are only active in voluntary health insurance. Regarding other social risks, they are active in the private pension sector, where services are provided by both mutual benefit societies and mutual insurance companies (often linked to life insurance policies).

The public consultations initiated by the European Commission and the UK House of Lords at the end of 2015 aimed to assess "*whether existing regulatory tools are sufficient to tackle the problem, or whether new tools need to be developed*". The consultations highlighted that overall, a regulatory environment adapted to the digital platform economy and supportive of innovation and entrepreneurship were cited as desired actions[101].

From a social economy perspective, there is evidence that digital social economy platforms are not involved in discussions of such regulatory issues (A Strowel & Vergote, 2017) whilst the social nature, the underlying values and governance of the social economy may be key in promoting fair employment contracts and respecting employment rights. In fact, digital social economy platforms work often with volunteers and 'workateers' with whom permanent employment conditions are not applicable; the scope of social enterprises is not to capitalise their profits but maximise their impact through the fair participation and contribution of individuals. Nevertheless, it is apparent that the legal environment of for-profit digital platforms will impact the digital social platform economy by default.

There is ample consensus that the following elements will have to be framed and regulated in the forthcoming years in order to support the uptake and integration of digital platforms by social entrepreneurs:

- **Legal definitions of platforms** should be consistently defined across countries and should focus on the type of items offered and take into considerations differences between for-profit (commercial) versus social, cooperative, community-centred objective (Alain Strowel & Vergote, 2018).

In this respect, the EU Regulation on platform-to-business relations adopted on 20/06/2019 sets a framework aimed at creating a fair, transparent and more predictable business environment for

[100] This aspect is also reflected by the lack of credible and regularly collected statistics in the area.
[101] Synopsis Report on the Public Consultation on the Regulatory Environment for Platforms, Online Intermediaries and the Collaborative Economy, available at: https://ec.europa.eu/digital-single-market/en/news/results-public-consultation-regulatory-environment-platforms-online-intermediaries-data-and

smaller businesses and traders when using online platforms. Notably, **no specific reference is made to the social economy**.

- With respect to **ex-ante (or constructive technology assessment[102]) or ex-post regulation assessment**, currently digital platforms are introduced onto the market without prior consultation or an estimation of their potential socioeconomic impacts. Due to their fast growth, they prompt ad-hoc government action without much evidentiary basis.

Given the recent backlash and disapproval of particular digital platforms practices (e.g. Uber, Deliveroo), **more systematic evidence is needed to inform the current debate, with more room for nuanced opinions**.

- To date, regulators have been creating **institutional boundaries between the sharing economy and the regular economy by putting a cap on sharing activities**[103]. This strategy allows governments to create clear boundaries between professional providers and incidental providers as well as "tackle" tax avoidance practices (the sums gained by incidental providers are small enough to be ignored or fall under existing tax exemption levels).

Currently, however, governments struggle to enforce such rules, since for-profit platforms do not give them access to user data as they are protected under current privacy (GDPR) laws, while alternative ways of monitoring do not outweigh the costs involved. Since **this is a complex issue requiring the participation of various stakeholders**, prior to any recommendations more systematic evidence is needed to see how to best approach it.

- **Crowdfunding platforms** need complex schemes of control and regulation, as due to their use of non-financial return models they typically fall outside the purview of financial regulators (Lehner, 2013; Garvey et al. 2017).

To date, the following general legal acts regulating crowdfunding platforms are used on EU level: the Anti-Money Laundering Directive, The Regulation on Information on the Payer Accompanying Transfers of Funds, The Regulations on Unitary Patent Protection, The E-commerce Directive, the Directive on Misleading and Comparative Advertising, the Directive on Unfair Commercial Practices and others such as the Regulation on European Social Entrepreneurship Funds, depending on the type of crowdfunding chosen and the business model is used in a certain country.

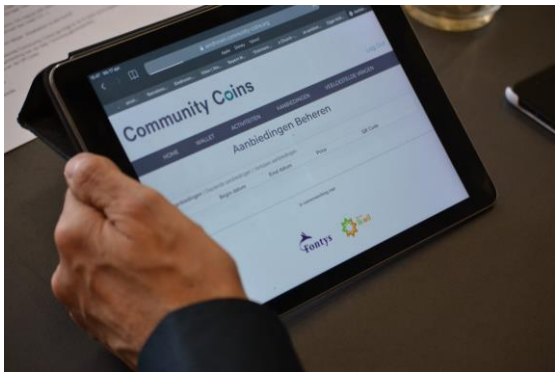
The recent introduction of regulations for crowdfunding platforms has not resolved all issues. Further research is needed to understand how the European (and global) legal system(s) is/are prepared for the complex scheme emerging from of crowdfunding. This is particularly important since often globally dispersed participants and their fiduciary duties impact on investments and ventures (Rubinton, 2011). There are cases of moral hazards and interference besides issues of taxation and currency exchange, which might be influenced by strategic international politics that require strict oversight and control (Lehner, 2013). Overall, coordination between policymakers on EU and national level is needed to discuss the strong and weak points of the regulatory regime around crowdfunding and how to best approach it collectively (Sadzius & Sadzius, 2017).

Against this background, experiments with digital platforms are emerging across Europe ranging from cooperative-based and crowdfunded platforms to platforms that promote the use of alternative currencies via novel blockchain technologies (Scholz, 2014; Scholz & Schneider, 2017).

Community Coins Eindhoven

[102] For further information on constructive technology assessment, see Schot J. (1992), Constructive Technology Assessment and Technology Dynamics: the case of clean technologies, J. Science, Technology & Human Values 17(1), pp. 35-56; Rip A. & Kulve H., (2008), Constructive Technology Assessment and Socio-Technical Scenarios. In: Fisher E., Selin C., Wetmore J.M. (eds) *Presenting Futures. The Yearbook of Nanotechnology in Society*, vol 1. Springer, Dordrecht; Rip, A. (2018). Constructive technology assessment. In *Futures of Science and Technology in Society* (pp. 97-114). Springer VS, Wiesbaden.

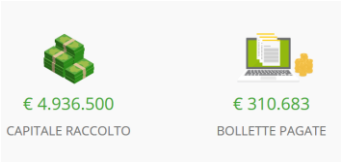
[103] E.g. an increasing number of cities allow home sharing for a fixed number of days.



The **Community Coins Eindhoven** in the Netherlands, an initiative of Possible Today Foundation with the support of Fontys University of Applied Sciences and Stichting Ik Wil Foundation in Eindhoven, uses a digital blockchain-based technology to underpin a collaborative economy platform. The platform brings volunteers in contact with projects and "translates" the pledged/delivered commitment of volunteers in a digital currency that can be exchanged for discounts at local retailers. The platform also offers the opportunity for volunteers to earn badges and build a 'social resume" laid down on the blockchain for authenticity.

The possibility of a fully socialised sharing venture, with platforms owned and governed by users, is an intriguing option for the social economy. It would mean that users would be able to build and use large-scale platforms to benefit from economies of scale and network externalities and retain control of their own data. Such platforms are moving some important steps in the social economy.

Energia Positiva



Energia Positiva in Italy is disrupting the energy sector by allowing customers to be producers and consumers (prosumers) of renewable energy. To this end, data sovereignty is carried out through blockchain. To date, the cooperative engages almost 415 members in 17 shared systems producing some 1.6 GWh of energy annually. This translates into circa 310.000€ of paid energy bills.

Since self-sovereign identities are decentralised and encrypted, identity theft or hacks become less of a problem. Translating this principle in other setting would mean that self-sovereign identities may allow start-ups and other social economy organisations to provide services to beneficiaries and vulnerable populations while granting agency and protections to recipients of those services.

Finally, regulation should also ensure that social economy enterprises do not risk being used by for-profit enterprises to circumvent regulations on workers' rights. The collaboration between for-profit corporations and the social economy may lead to positive outcomes when based on mutual interests and specialisations. This is the case of SocialTechno, which brings together large for-profit technology companies with non-profit organisations to equip the latter with technological infrastructure and software dismissed by large tech companies.

Overall, as evidenced above, legal disruption is not an accident of the platform economy. It is a core feature of it (Lobel, 2016). Digital platforms challenge the law, and this is a key element and consequence of their operations. To be constrained by rules applicable on a national territory appears an anachronism, since platforms have a global perspective and outreach.

3.3 More insights from the case studies

To explore the way digital platforms contribute to the social economy we identified and interviewed 13 cases of social economy initiatives using digital platforms across the four countries of the study (Greece, Italy, The Netherlands and the UK).[104]

In Greece, the two digital social economy platforms analysed (TEM and Elektra Energy) aim to disrupt long-established sectors – one governed mainly by private entities (the banking sector) and the other governed by public authorities (the energy sector). Both initiatives started-up during the economic crisis and set to exploit features of platform technologies to facilitate and achieve social impact. TEM is the only alternative currency initiative in Greece that is still operational within the local community, thus making it unique in terms of exploration of its success factors, obstacles and lessons learnt, while Elektra Energy is currently moving towards an energy-blockchain system to improve reliability and security of transaction records in close collaboration with a Greek academic partner and a Croatian technology company and will be operational in the Attica region.

In Italy, the digital social economy platforms interviewed operate in the areas of training (MAAM, La Scuola Open Source/SOS), energy (Energia Positiva), employment (Formichine) and collaborative economy between private companies and the social economy (SocialTechno). The digital platforms in the cases of MAAM, Energia Positiva and SocialTechno are fundamental for the performance of the missions of the initiatives: without the digital platforms the initiatives could not possibly exist. As discussed in the conceptual framework: "the digital platform 'is' the social economy enterprise". In the other cases, the platforms are functionally supporting the services offered and extent greatly the impact achieved by enabling reaching greater numbers of beneficiaries and geographic locus than it would be possible through traditional/non-technological networking methods. In the case of Formichine, the digital platform permeates the service, as the digital technologies underpin the matchmaking between demand and supply of labour. This is particularly important given the complexities involved in the working relationships with vulnerable workers. La Scuola Open Source/SOS uses its digital platform to bring people together, substituting face-to-face interactions. This way, though not strictly necessary for the existence of the initiative, digital platforms certainly are functional to its sustainability.

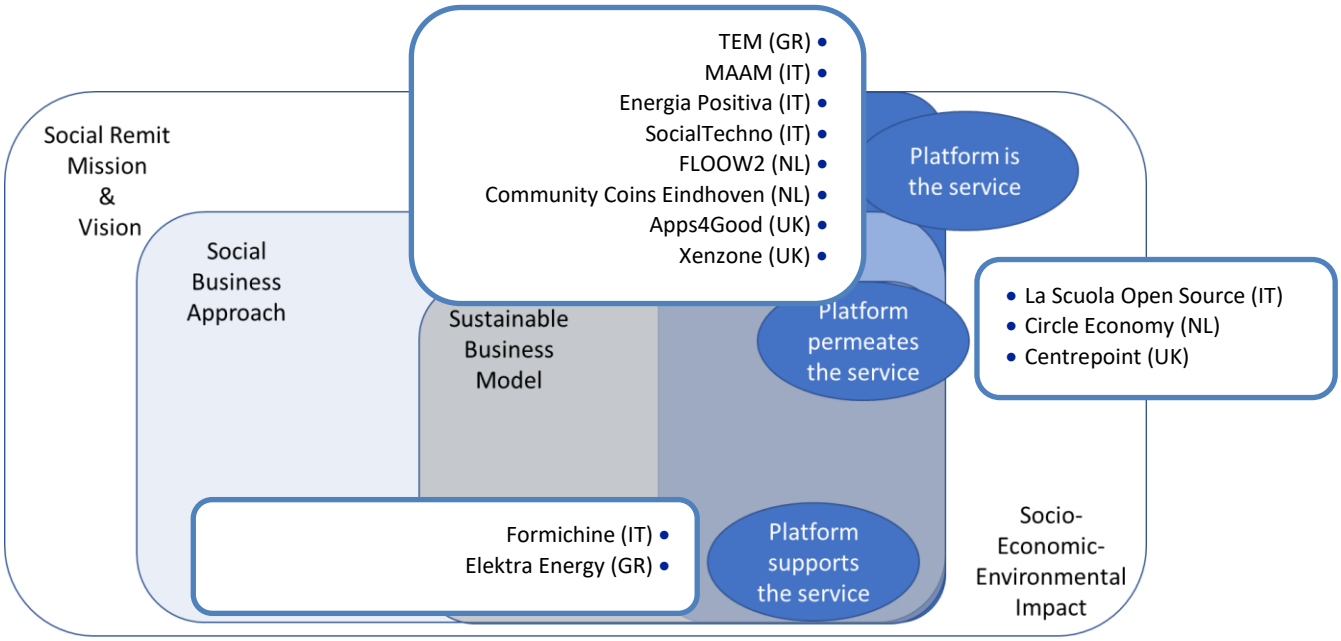
In the Netherlands, the platforms identified and explored were the Circle Economy, FLOOW2 and Community Coins Eindhoven. All three are pioneers in the circular economy, healthcare and social credit respectively. The platforms – as technological artefacts – are central to the services rendered. In the case of Circle Economy, a social enterprise organised as a cooperative, the platform contributes towards the acceleration of the country's transition to circularity through on the ground, action focused, development of practical and scalable solutions. In particular, Dutch aWEARness was explored, a pioneer in chain management for the textile industry, developing textile products for reuse, which is active on global scale. FLOOW2 is a pioneer in identifying the opportunities of asset-sharing. To this end, it has developed an online B2B sharing marketplace that enables companies, (healthcare) organisations, and government agencies to make overcapacity of equipment, waste, materials, services and the knowledge and skills of personnel transparent and tradeable. The founders of Possible Today foundation developed the Community Coins Eindhoven, a blockchain based social credit system that was inspired by the Greek solidarity approach to the financial crisis.

In the case of the UK, the platforms analysed include Centerpoint, Xenzone and Apps4Good. The digital platforms are used in all three cases as central elements for the provision of social services in the areas of social welfare, mental health and education. The platforms employed by Xenzone and Apps4Good are fundamental to the social economy enterprises, as without them they could not offer their services to their beneficiaries. In the case of Centrepoint, the platform serves the collection of big data on homelessness and through the evidence gathered and analysed, evidence is generated for informing relevant policymaking. Although not central to its own viability, the platform is particularly important on policymaking level as it allows the collection of vital information on

[104] Short information on all cases interviewed during the study may be found in Annex II of the present report.

homelessness, which is then used for designing approaches to deal with this severe issue on regional level.

Figure 14: Use of digital social economy platforms in the context of social economy enterprises (Greece, Italy, The Netherlands, UK)



From an entrepreneurial perspective, the majority of the social economy enterprises employ a hybrid business model relying upon provision of their services for a fee, grant funding and public procurement. To a significant extent, these are supported by private donations and subsidies. Nonetheless the Dutch and British initiatives support more effectively their social and societal mission with a viable business model, as they operate in a context that supports the institutionalisation and digitalisation of social economy enterprises. These may also be indicators of why the introduction of digital technologies rather than destroying jobs are a great job-creating machine especially in the areas of care, education and provision of services to others (Stewart, De, & Cole, 2015).

3.4 Drivers and obstacles associated with the uptake of digital social economy platforms

Concerning the uptake and integration of digital social economy platforms within the social economy and by social economy initiatives, our analysis points to certain enablers that drive the digital uptake in the social economy, and to obstacles hindering diffusion. Five types of drivers/obstacles emerge:

Resources

- A **distributed pattern of income streams**, consisting of public grants or funding and fees for services, is seen as enabling factor towards digital social economy's independency, autonomy and long-term sustainability.
- The recent financial crisis of 2008 has increased pressure on the social economy to find alternative sources of funding to **finance new digital ventures** (Bielefeld 2009; Ferrera et al. 2004; Lehner 2011). Finding alternative, tailored methods of financing requires innovative approaches especially in designing and deploying technologies to engage with people's values and opinions, social media platforms and alternative reward systems. To this end, crowdfunding is considered an enabling factor.

MAAM (IT) run an equity crowdfunding campaign in the first half of 2018, reaching a target of around €450.000.

Source: MAAM

- The lack of awareness, access and availability of '**off-the-shelf' platforms** and ICT applications specifically designed / calibrated for the social economy, is an important barrier towards digitalisation. Resource constraints, lack of financial support from public programmes, and skills constraints limit the social economy's access to such basic digital commodities.
- However, no-code application platforms may act as a driver for growth. According to Gartner's forecasts, the low-code and no-code application platforms will account for 65% of all app development by 2024. This means the majority of apps created in the next 5 years will be developed using platforms and tools that provide turnkey ways to program[105].

Collaboration

- An enabler mentioned by all the interviewed digital social economy platforms in this study concerned the need for establishment of close **collaborations** with individuals and organisations (private and/or public) to embark in common tasks that each party, alone, would not be able to complete successfully.

"Thousands of people help make Centrepoint the UK's leading youth homelessness charity – our supporters, volunteers, staff and ambassadors all play a huge part in helping us create real change"

Source: CentrePoint

- The medium-to-long term sustainability of digital social economy platforms depends upon distributed participation and open communication with their end-users and beneficiaries. Therefore, **tailored services designed** with the needs of end users and beneficiaries in mind may have better chance of success. Moreover, the engagement of beneficiaries/end-users – especially of disadvantaged groups – in the decision-making process builds the latter autonomy and self-perception.
- Another enabling factor concerns the establishment of **collaborations between social economy organisations and/or other types of private or public organisations** with which they share the same values, even if they do not share geographic proximity. The contribution of digital platforms is paramount in this sense, as they allow for connections between people and organisations across the globe. And these global networks may be employed to **design solutions to address local problems**. The design globally – manufacture locally concept is addressing this challenge; yet, it remains to be seen if, how and when it may be applied on a larger scale.

The Social Good Accelerator brings together a delegation of associations, social entrepeneurs, social innovators and foundations, working together to encourage Tech and Social Good actors to collaborate for creating innovative solutions in Europe.

Source: https://socialgoodaccelerator.eu/

- During the policy co-creation workshop, it was highlighted that the **formulation of teams / clusters of social economy enterprises** that have up-taken and are considering up-taking and integrating digital platforms within their operations, can constitute an important enabler of diffusion of (good) practices, knowledge transfer, co-creation of socially transferable solutions and a source of inspiration for digital social innovation. Such formations will help digital social entrepreneurs to exchange views on new ways to tackle technological, social or societal issues, leading effectively to greater peer-to-peer learning effects.
- Another enabler concerns collaboration and cooperation with the **private sector**, especially with **technology and market-oriented companies**. Through such collaborations it is possible to leverage 'in-kind services' and transfers of knowledge and resources to augment

[105] https://www.gartner.com/doc/reprints?id=1-1FKNU1TK&ct=190711 (last accessed June 2020). According to Gartner, the no-code application platforms are part of the low-code application platforms market. In the context of the present study, the terms low-code and no-code platforms are used to denote the applications requiring minimum or no effort by users to be used.

the operative and absorptive capacity of social economy. Collaborations with IT companies – especially large and established ones – can facilitate the transfer and adaptation of off-the-shelf digital solutions. Leveraging support from technology-advanced companies is offering multiple benefits: it helps obtain visibility and shifting operational costs to the private enterprises, allows social economy innovators to perform fast proof-of-concept and "field testing" with social services. Overall, it opens a communication dialogue between the social economy and the for-profit/business economy that can help overcome differences in scope, governance, legal and organisational structures, cultural and cognitive distances.

SocialTechno *(IT) is member of the TechSoup Global Network, which to date has served more than 650,000 social economy organisations worldwide, equipping them with the most advanced technological tools of commercial value of over $5 billion.*

Source: SocialTechno

Education/training, skills

- The lack of a digital native population[106] within the more traditional segments of the social economy may be seen as a barrier. Skills and understanding of digital natives need to be taken into consideration during the design of interfaces and services/commodities offered via digital social economy platforms.
- Relying on volunteers or even 'workateers' with limited training or specialised skills is an obstacle in the integration of new digital technologies in existing digital platforms, since such endeavours require advanced skills and extensive experience.

Recognition of social value and impact

- The introduction of digital social economy platforms is disrupting important sectors and long-established sectors, such as banking and energy, by introducing new business models that are based upon fair and ethical standards. The a**cknowledgement of their contributions** can be an enabling factor towards becoming an attractive career option of ambitious (and tech-savvy) young graduates, obtaining public support to test and uptake novel digital technologies and introducing new ethical and sustainable practices and production methods in traditional sectors such as finance and energy.
- The **contribution of digital social economy platforms in addressing local challenges and bringing solutions to socioeconomic issues through the design and provision of relevant commodities and services, and employment** of (disadvantaged) workers is another enabling factor. Such an approach will facilitate the establishment of the social economy as an integral element of Europe's socioeconomic context with significant implications on various levels, including preference of people towards working in social economy enterprises,
- The identification, analysis and **extraction of transferable elements** from good practices and successful cases from the social economy in employing digital platform technologies – upgrades with advanced technologies such as blockchain, AI, IoT – is also considered an important enabling factor.

Regulations

- The **improvement of regulation** especially concerning rights and obligations of digital platform users and the harmonisation of platforms' social insurance landscape across the EU, is touted to help accelerate uptake. This is important especially considering that the digital platform economy is becoming the dominant economic

In Greece the use of blockchain for energy prosumption requires overcoming legal barriers that concern the energy production, distribution and use. This can be accomplished via collaboration with national authorities.

Source: Elektra Energy

[106] The concept of "digital natives" is broadly used to characterize (young) people born during the digital age and growing up using ICTs. Source: (ITU, 2016), Available at: https://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013_without_Annex_4.pdf

paradigm in the globalised society. Therefore, the diffusion of the digital social economy platforms may open attractive and viable career options based on the technical as well on ethical approach of the social economy in the respect of workers' and working conditions. Moreover, procurement of digital solutions to address public/social and societal challenges should be based on the social impact as well as technological fit.

- Regulatory sandboxes, involving relevant intermediaries from the social economy such as the Waag society, the ShareNL, the Impact Institute (UK), the Social Finance digital labs (UK), the Open Source School (FR) could foster a regulatory co-creation space where the effect of technologies may be evaluated against the principles and values of the social economy.
- Ex-ante constructive technology assessment could also be an enabling factor in the improvement of regulation in the area of introduction of digital platforms in the social economy, as they can help foresee implications on working and living conditions and accordingly design policies to counterbalance negative aspects.

3.5 Trends and future prospects: how digital platforms can be geared towards the next generation of social entrepreneurs and the new social economy

This section aims to provide insight on the potential trajectories of digital platforms in the forthcoming years and the implications for the social economy. It is the outcome of the synthesis between literature insight, the outcome of the interviews undertaken with digital social economy platform representatives in the four countries object of the present study (Greece, Italy, The Netherlands and the UK) and the forward-looking exercise conducted as part of this study with a carefully selected pool of digital and social economy experts.

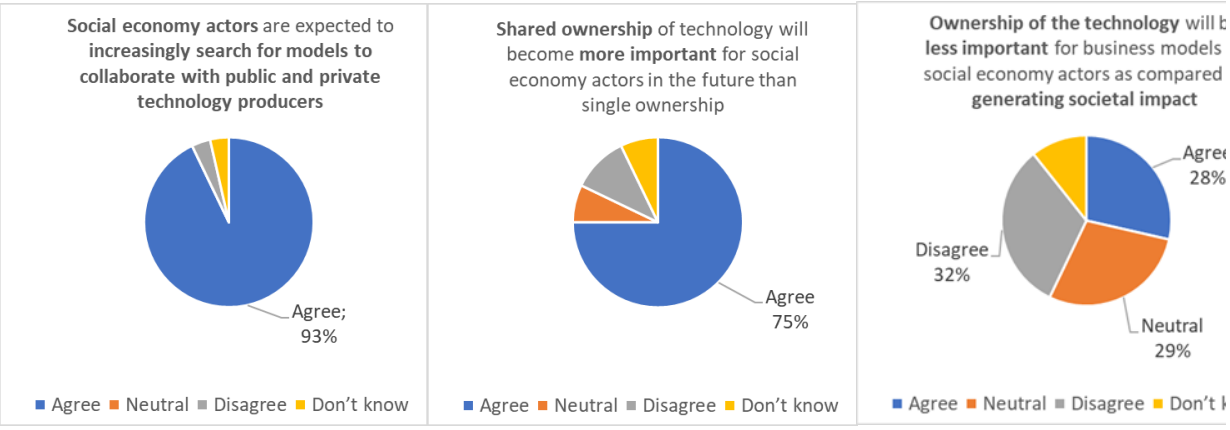
3.5.1 Prospects of the digital social platform economy

In the past few years, digital platforms have gained considerable momentum. This socio-technical phenomenon, evident by now in a wide range of economic sectors, covers both for-profit and social-and-societal-impact oriented activities, disrupting our understanding of what is a user, a consumer and a producer, what constitutes value, and the role of the state in this new economic paradigm (Mazzucato, 2018). This disrupting view is supported also by the experts of our forward-looking exercise, as 71% agreed that in the next 15 years customers will be users, providers and members of digital platforms.

New finance mechanisms are emerging and are expected to grow in the coming years. These have strong social connotations. The social economy should make good use of these new funding schemes, partly because they may help bridging the shortcomings linked to traditional funding opportunities, but also because there is strong interest in being connected to socially-driven alternative funding mechanisms (Scholz, 2016). Examples of such mechanisms, which are based on collective self-organisation and cooperative principles, include ethical banking, financial cooperatives, community development banks, solidarity microfinance, complementary currencies, community-based savings schemes, participatory budgeting, crowdfunding and crowdsourcing, crypto-currencies, social impact bonds and impact investing, among others (ILO, 2016).

In relation to technology ownership and business models, there is almost unanimous consensus (93%) among the experts that the social economy will continue to look for and experiment with (new) models to collaborate with public and private technology producers. This is in line with the literature on *platform cooperatives*, i.e. platforms that are collectively owned and democratically controlled are currently on the rise on global level (Sutton et al., 2016). The phenomenon raised important questions about technologies ownership and the majority of experts (75%) agreed that shared ownership will gradually become more important. In the next 15 years, however, it is possible that ownership will give way to the generating social impact; in other words, in the near future, the social economy may be concerned to retain and ringfencing ownership of digital social economy platforms especially in critical areas such as governance, data used, stored and circulated, access to data. Nonetheless, how this stance will impact the business model is not yet clear (or determinable).

Figure 15: Evolution of ownership of technology and business models in the next 15 years and their potential implications on the social economy?



Finally, with respect to improvement of digital social economy platforms, in almost all case studies emerged how they were looking at technological options and opportunities to expand further their platforms. Their strategy consists in integrating advanced technologies, such as distributed ledger technologies (blockchain), AI and IoT in order to enhance functionalities and provide more/better and more secure services. Their individual strategies, of course, are strictly dependent on the missions they serve, the social and societal impact they strive to achieve, and the business model adopted in due respect of their targeted audience of users, beneficiaries and stakeholders.

TEM	**Energia Positiva**
TEM is currently working into adopting cryptocurrency technology on its platform, in collaboration with the developers of the Faircoin[107], to further expand the possibilities offered by the TEM currency.	The Italian social economy enterprise is currently working on the integration of Artificial Intelligence and distributed ledger technologies (Blockchain) solutions on its platform to improve its processes and add further layers of security.
Xenzone	**Academy Het Dorp**
Xenzone is currently exploring how to use Artificial Intelligence to create new models in preventative, early response mental healthcare, through investigations with collaborators for Deep Learning and Recurrent/Time-dependent Neural Network applications.	The Academy is currently exploring how to use sensors in elders diapers, in order to know when new dry diapers are needed and how AI/self-learning algorithms can contribute in predicting when severely disabled people can develop aggressive behaviour, so as to prevent it.

3.5.2 Digital social economy platforms and territorial cohesion

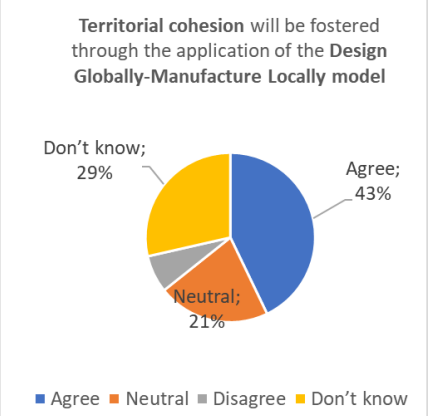
As identified in the cases explored, the use of digital platform technologies allows and inspires the social economy to connect with individuals and organisations with which they share common interests, values, missions, and not necessarily geographical proximity. A key difference between digital social economy organisation, including social enterprises and the non-digital counterparts, rests in that the former are enabled to address challenges (both local and global) via global methods and technologies[108]. Hence, the digital social platform economy creates positive conditions enables opportunities for social cohesion, it paves the way towards transition to digital economy fit for the digital Europe, and may project the European social economy on the global stage (European

[107] Faircoop (https://fair.coop/en) are the developers of the Faircoin
[108] This topic is currently researched in the context of the ERC project "Cosmolocalism" aiming to advance understanding of the future of work in the age of automation and beyond.

Parliament, 2017).

Academy Het Dorp	SocialTechno
Academy Het Dorp would not be able to design its services effectively and efficiently if it weren't for its close connection to its end-users, being people with disabilities. For the technological design of its operations it is using technologies developed internationally.	SocialTechno promotes synergies between Italian social economy organisations and international high-tech for-profit companies, like Microsoft, to allow the first to access innovation and exploit the advantages of advanced digital technologies.
Community Coins Eindhoven	**Centrepoint**
The Possible Today foundation is currently testing the Community Coins Eindhoven platform, which not only matches social initiatives and volunteers but also contains an advanced volunteer recognition system based on blockchain. The creation of the platform was inspired by Greek timebanks and for its development Greek timebanks and UK based technology providers were consulted.	In the UK, Centrepoint relies upon its close collaboration with individuals, local councils, other social economy enterprises, and interested stakeholders across the UK in order to collect local information on homelessness through the use of Big Data technologies.

Nevertheless, in our forward-looking exercise, less than half of the experts agreed that territorial cohesion will be fostered through the concept of "design globally-manufacture locally" (which technologically is supported via digital platforms). Based on relevant discussions with experts, it can be argued, that although the concept offers significant benefits to local communities, yet in the time frame of 15 years, this is considered too narrow to ensure a widespread diffusion of outcomes and impacts on local and regional levels.

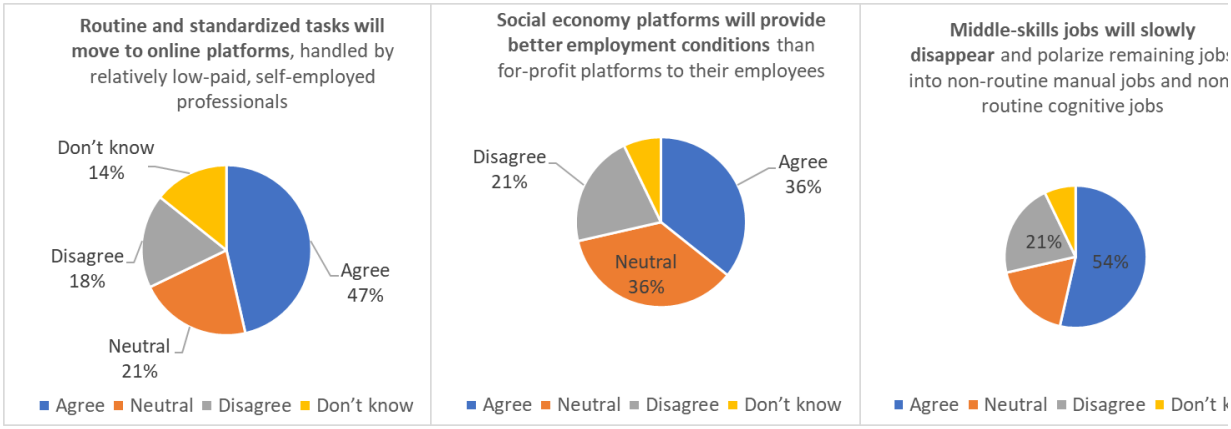


3.5.3 Digital social economy platforms and future entrepreneurial models: generating economic value while promoting employment and good working conditions

An important implication of future digital platforms is anticipated to be on the reorganisation of work that will powerfully alter the distribution of wealth and income in societies. As the notions of work and employment are being 'reformatted', traditional employment – a single organisation providing long-term engagement, usually with some form of social benefits – is giving way to contract arrangements making "employment" more precarious (Kenney & Zysman, 2015). This trend has been discussed by our experts (Figure 16**Error! Reference source not found.**). Around half of them agreed that in the next 15 years routine and standardised tasks will move to online platforms, where relatively low-paid, self-employed professionals will be available to handle them, while only one third considers that social economy platforms will provide better employment conditions that their commercial counterparts.

The polarisation of jobs between non-routine and routine tasks was the relevant discriminant in the discussion: around half of the experts considered that polarisation will be very high by 2035. All agreed that freelance work, self-employment contract labour and non-traditional career paths - supported by digital platforms – will continue to increase steadily.

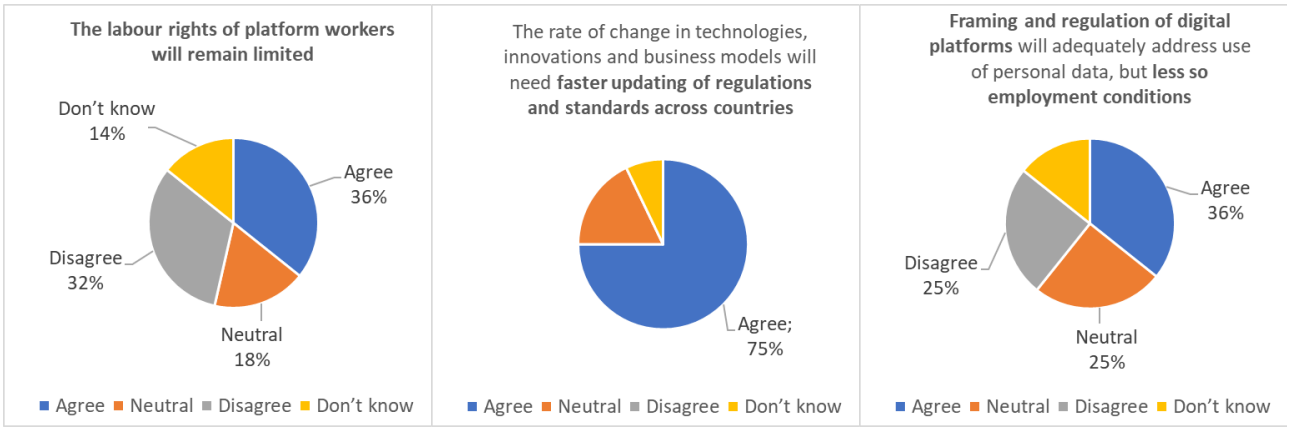
Figure 16 Future prospects of employment conditions and paths in the next 15 years?



Within the context of the social economy, as identified recently by the ILO and through discussions with representatives of digitally-enabled social economy initiatives in all four countries, the social economy can help create and preserve employment in traditional sectors and promote decent working conditions by providing quality and somewhat stable jobs. They may support disadvantaged and vulnerable groups joining the labour force, and help the transition from informal to formal employment (Borzaga et al., 2019). Nevertheless, this positive outlook was not equally supported by the outcomes of our forward-looking exercise (Figure 17). The experts were almost equally split about whether labour rights of platform workers will remain limited or not in the next 15 years, or if the framing and regulation of digital platforms will fail to address employment conditions.

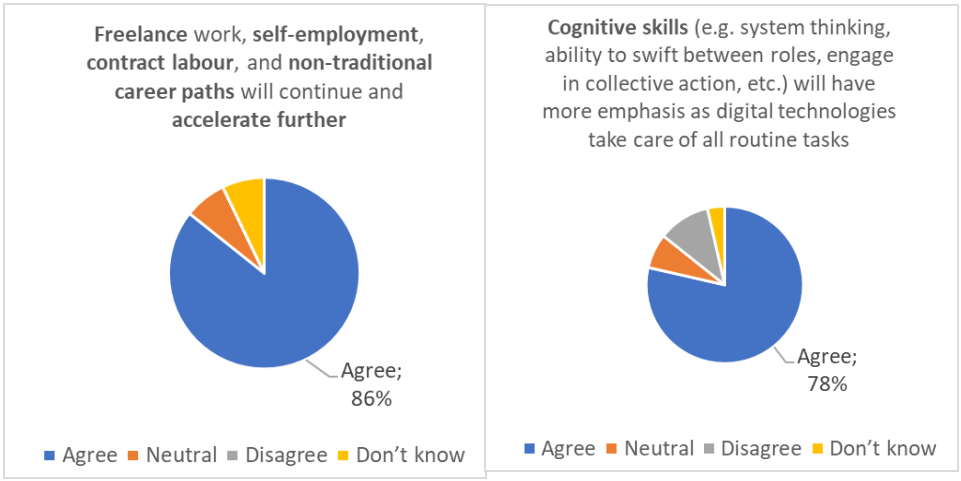
The point on which the majority of the experts agreed upon concerns the need for a faster update of regulation and standards to follow the speed of changes in technologies, innovations and business models.

Figure 17: What future for labour rights and social economy enterprises regulations in the next 15 years?



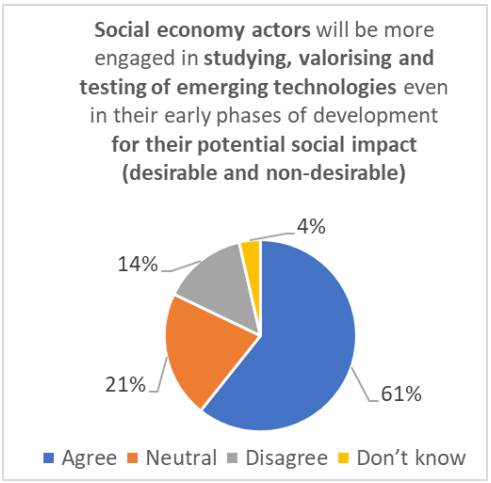
The social economy may also help to 'channel' jobs towards emerging sectors like the 'silver economy' that are at risk of non-standard forms of work, by providing more job security. This will be particularly important in the coming years, as a large share of employment will come from the services sector (including personal services of general interest), but will be much less structured than currently as freelance, self-employment, contract labour and non-traditional paths are anticipated to accelerate further, as discussed by the majority of our future-looking consulted experts. This emerging trend will require redirection of education and training programmes. The majority of experts denoted that in the next 15 years more emphasis will be put on the development of cognitive interpersonal skills, such as those required for successfully providing social care, as digital technologies will undertake and perform routine tasks.

Figure 18: What types of employment and what skills in the future?



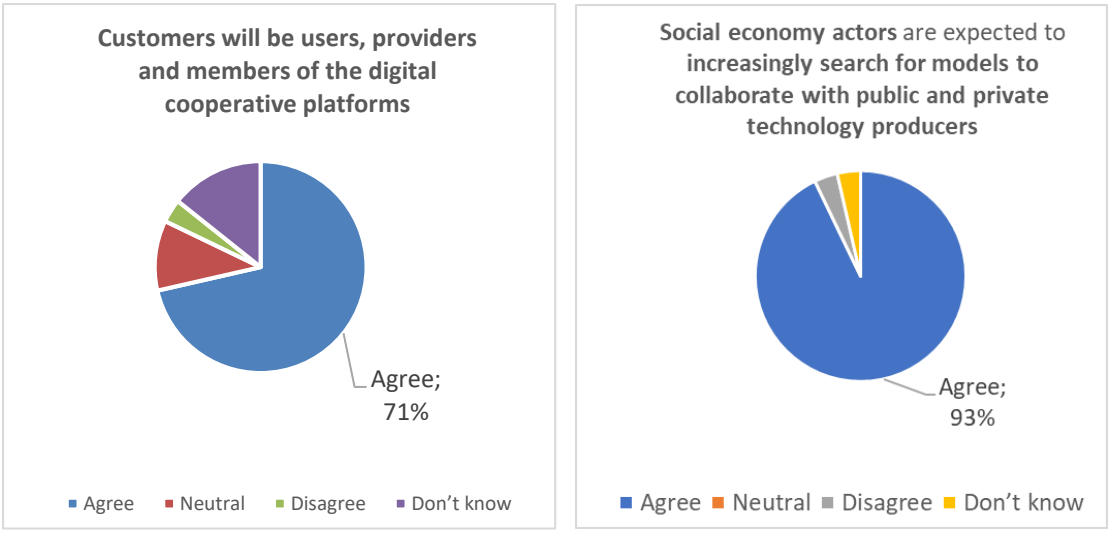
Yet, according to the experts surveyed, in the future, technology development will still, to a large extent, remain motivated for achieving the purpose of private profit. This suggests that the 'double-bottom' line situation for the social economy will remain.

Figure 19: What role for SE actors in the development of emerging technologies?



Government support, partnering with educational institutions and investors, could encourage cross-fertilisation between social entrepreneurship and the peer-to-peer digital world through multiple actions, such as dedicated incubators, tools and policies for funding, and collaborative projects between different institutions and organisations (Acquier & Carbone, 2018). Such an approach requires coordinated communication and efforts by both the decision-makers and the stakeholders involved in and with the social economy to build the context of collaboration, identifying and spearheading successful initiatives, cultivate an open and transparent communication amongst the parties for co-creating policy options.

Figure 20: Will the social economy need to collaborate more with public and private technology providers?



As underlined by a contributor of our forward-looking exercise, "*It is not automatic that the governments and public institutions will facilitate or provide a bridge between tech providers and social economy. It has to be an active policy across member states; the state itself need to adopt more innovative work practices, seeking new ways of facilitating the use of technology by social economy actors. They need to provide examples, perhaps through public tendering, etc.*".

4 TECHNOLOGY SPECIFIC ANALYSIS: ADVANCED DIGITAL TECHNOLOGIES

4.1 State of the art

Technologies are a complex unit of analysis. This is especially the case for ICT or digital technologies, because they are often linked, interdependent, and connected. One way to group technologies into categories is based on patents as indications of newly invented technology. Appropriate ways to classify technologies in different groups change over time. Some groups of technology split, and other come together (converge or integrate), with or without a new name.

Table 2 presents a new classification of ICT into 13 technology areas as proposed by Inaba and Squicciarini (2017), mentioning the function the technology enables and which applications it encompasses. Their definition of ICT is based on the technology classes of the International Patent Classification (IPC) and aligns with the OECD definitions of the ICT sector (2007) and of ICT products. As scientific breakthroughs, they are disruptive to the state-of-the-art in science. In the first two columns, technologies appear rather neutral. Only in the third column, which refers to more concrete applications, technologies 'come to life', but even at that level of abstraction it is very difficult to imagine and discuss the relevance for the social economy, or the positive and negative societal impacts. Which purposes would they fit? (e.g. people, planet, profit?).

Table 2: ICT Technology areas

Technology area	Enables	Encompasses
High speed network	High speed communication through networks. Enhances communication ability.	Digital transmission, network (protocols, architecture, etc.), telephone communication, broadcasting, and transmission, reception, channels (see e.g. Haykin, 2001; ATIS, 2001). Wireless network technologies are not included.
Mobile communication	Wireless communication by portable devices.	Cellular systems, wireless Local Area Networks (LAN) and Personal Area Networks (PAN). (see e.g. Stüber, 2011).
Security	Security in information processing and communication	Secret-coding, authentication, and electronic payment (see e.g. ATIS, 2001).
Sensor and device network	Communication among sensors and devices.	'Ubiquitous Sensor Networks', i.e. networks of intelligent sensors (see e.g. ITU, 2008).
High speed computing	High speed data processing. Enhances data processing ability of computers.	Computer architecture, composition of hardware (arithmetic, logic, control, input/output, and storage units), computer programs, and operating systems (see e.g. Hennessy at al., 2012; ATIS, 2001).
Large-capacity and high speed storage	Storage of large-capacity data and high speed storage.	Various storage device-related technologies (e.g. semiconductor memory, magnetic storage, optical storage, etc.); network (e.g. network attached storage, NAS; storage area network, SAN); and file systems (see e.g. ATIS, 2001).
Large-capacity information analysis	Dealing with large amounts of data for analysis.	Database and numerical analysis, computational science, and computer aided engineering (see Date, 2005; Teorey at al., 2011; Strang, 2007).
Cognition and meaning understanding	High-level concept understanding.	Cognitive computing (see Wang at al., 2010).
Human-interface	Operability by human beings.	Human-interface technologies (see e.g. Raskin, 2000).
Imaging and sound technology	Processing and transmission of images and sound data.	Video equipment, television, image processing, acoustic equipment, and audio signal processing-related technologies (see e.g. Rosenfeld at al., 2014; Bovik, 2010; Spanias at al., 2006; ATIS, 2001).
Information communication device	Electronic components (both active and passive devices) realising function of information processing or communication.	Electronic circuits, communication cables, semiconductor lasers, etc. (see e.g. ATIS, 2001).
Electronic measurement	Electronic measurement technologies utilising information processing and communication.	Radio navigation, radio direction-finding, etc. (see e.g. Klaassen, 1996).
Others	Residual category. ICT related technologies not belonging to any of above categories.	Data input and output, hybrid computer, etc. (see e.g. ATIS, 2001)

Source: Inaba and Squicciarini (2017, p.11)

The technology categories on which we wanted to have a closer look in this study include: Open source technologies, Internet of Things (IoT), Distributed Leger Technology (including Blockchain), Big Data, Cloud Computing and Artificial Intelligence). Such categorisation is much more qualitative, conceptual, visionary and dynamic: the exact definitions, narratives and boundaries are changing over time. These technology categories often overlap and enable each other (e.g. on platforms), and they do not exclude each other. E.g., none of them can do without Big data. In this sense Big data has **converged** with the other technologies mentioned, and therefore is difficult to study in isolation. How the various advanced digital technologies relate to each other varies in specific cases. In the case studies it was indeed evidenced that several of these new **technologies are integrated** in the solutions that the organisations offer. Nevertheless, we offer below a description of each of the chosen categories of advanced digital technologies.

Open-source software (OSS) refers to computer software whose source code is released under a license where the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose (Laurent, 2004). Free and open-source software (FOSS) is software that can be classified as both free software and open-source software. That is, anyone is freely licensed to use, copy, study, and change the software in any way, and the source code is openly shared so that people are encouraged to voluntarily improve the design of the artefact. This is in contrast to proprietary software, where the software is under restrictive copyright licensing and the source code is usually hidden from the users[109]. Open-source hardware consists of physical artefacts of technology designed and offered by those that develop them through use of publicly shared design information. The term usually means that information about the hardware is easily discerned so that others can make it and is closely linked to the Maker movement and Do-It-Yourself (DIY) community (Gibb & Abadie, 2014).

Internet of Things (IoT) is the virtual and physical environment wherein sensors and actuators blend seamlessly with the environment and the information is shared across platforms in order to develop a common operating picture. It is enabled by wireless sensor technologies set out in the environment. These include home equipment (smart homes), smartphones, interactive facilities embedded in cars and public transport lines, public and private services (restaurants, libraries, etc.) and up to the latest fitness or entertainment wearable devices.

IoT has been defined in Recommendation ITU-T Y.2060(2012) as a global infrastructure for the information society, enabling advanced services by interconnecting (physically and virtually) things based on existing and evolving interoperable information and communication technologies[110]. Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of physical things (as objects from the physical world) or virtual things (from the information world), which can be identified and integrated into communication networks. IoT offers services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled. Aiming to integrate leading technologies, such as technologies related to advanced machine-to-machine communication, autonomic networking, data mining and decision-making, security and privacy protection and cloud computing, with technologies for advanced sensing and actuation, the Internet of Things (IoT) is a potential key driver of the digital transformation that enables to reinvent products, services, internal operations and business models[111]. From a broader perspective, the IoT can also be perceived as a vision with technological and societal implications[112]. Various kinds of IoT applications, e.g., "intelligent transport systems", "smart grid", "e-health" or "smart home" can be based on proprietary application platforms, yet they can also be built upon common service/application support platform(s) providing generic enabling capabilities, such as authentication, device management, charging and accounting[113]. For the social economy, IoT changes social relationships among people and objects. Applications in this framework are characterised by a

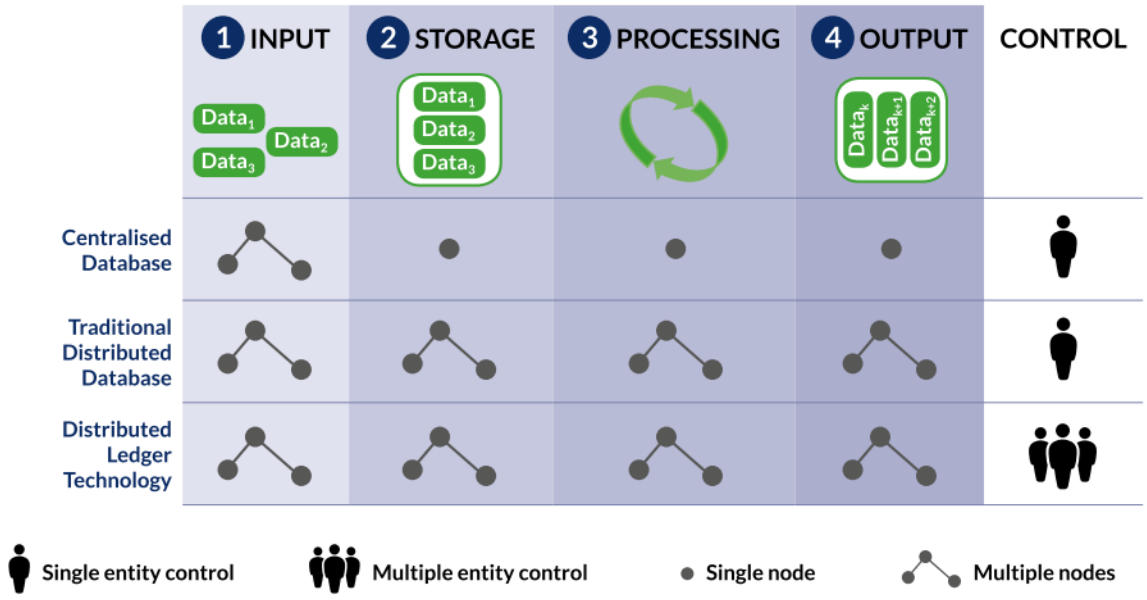
[109] https://en.wikipedia.org/wiki/Free_and_open-source_software
[110] Source: https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=y.2060
[111] Source: https://eiuperspectives.economist.com/sites/default/files/EIU-ARM-IBM%20IoT%20Business%20Index%202017%20copy.pdf
[112] Source: ibid
[113] Source: ibid

social and ethical perspective when retrieving personal data and simulating persons' or communities' behaviours.

Distributed Ledger Technology (DLT), including Blockchain, has established itself as an umbrella term to designate multi-party database systems that record, store and distribute securely transactions data. DLTs operate in an environment with no central operator or authority and has a very high tolerance for parties who may be unreliable or have malicious intentions. Blockchain technology is often considered a specific subset of the broader DLT universe that uses a particular data structure consisting of a chain of hash-linked blocks of data. A traditional distributed database consists of multiple nodes that collectively store and process data. However, the nodes are generally controlled by a single entity as opposed to DLT systems where there are multiple controllers (Figure 21). A DLT system is a system of electronic records that enables independent entities to establish a consensus around a shared 'ledger' - without relying on a central coordinator to provide the authoritative version of the records (Rauchs et al., 2018b). This aspect of distributed - multiple entities - control with DLT fits well with the values of the social economy. The origin and emergence of this technology was actually inspired by one of the founding principles of the social economy and its preference for distributed governance.

> *"Blockchain emerged from open source technology in which everybody can programme, participate and help make decisions. As the current Internet increasingly appears to be the opposite of an ecosystem, namely a monoculture of a number of centralised platforms, blockchain offers the unique opportunity to start with a clean page.*
>
> *Source: https://dutchblockchaincoalition.org/en/about-dbc*

Figure 21: From centralised databases to distributed ledgers



Source:(Rauchs et al., 2018a), p.23

A DLT system can be divided into three interdependent core layers:

1. Protocol: set of software-defined rules that determine how the system operates;
2. Network: interconnected actors and processes that implement the protocol;
3. Data: information flowing through the system that carries specific meanings in relationship to the design and functions the system is intended to play for users.

The application of DLTs is not limited to Bitcoin, finance or smart-contracting; it is spreading towards social and public domains by defining new opportunities for justice, economics, healthcare markets

and creative content exploitation. These latter applications include tax collection, identity management, personal health records handling, distribution of benefits, local (or national) digital currencies, property and land registry and any kind of government record. Blockchain appears to have a better chance to disseminate more quickly and achieve rigorous protocols and standardisation through open-source collaborations.

Big data are voluminous amount of structured and unstructured data. The potential value of big data is unlocked only when leveraged to drive decision-making, which is based on data management and analytics. Data management consists in database applications and, in more modern terms, they make use of blockchain or other forms of secure DLTs. Big Data Analytics refers to techniques used to analyse and acquire intelligence from big data. They apply to various high-impact applications such as e-commerce, market intelligence and security. Social perspectives of big data analytics are well known in critical socio-technical systems such as e-government and healthcare, to name a few. Big data analytics in medicine and healthcare, for instance, covers integration and analysis of large amount of complex heterogeneous data such as genomics, biomedical data and electronic health records data (Ristevski & Chen, 2018).

Challenging issues about big data that are often underlined include privacy and security.

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services). Cloud computing can be rapidly provisioned and released with minimal management effort or service provider interaction.

Different service models may be devised. These include the Software as a Service (SaaS) model, the Platform as a Service (PaaS) and the Infrastructure as a Service (IaaS). All these service models support several interesting social-oriented applications through the deployment of 'Community Cloud' and 'Public Cloud' models.

Artificial Intelligence (AI) refers to the computational, inferential and learning ability of digital tools (machines) to process, interpret and act upon data and information in a manner similar to humans. Artificial intelligence can be classified into three different types of systems: *analytical, human-inspired, and humanised artificial intelligence* (Kaplan & Haenlein, 2019). *Analytical AI* has only characteristics consistent with cognitive intelligence; generating cognitive representation of the world and using learning based on past experience to inform future decisions. *Human-inspired AI* has elements from cognitive and emotional intelligence; understanding human emotions, in addition to cognitive elements, and considering them in their decision making. *Humanised AI* shows characteristics of all types of competencies (i.e., cognitive, emotional, and social intelligence), is able to be self-conscious and is self-aware in interactions with others.

In general terms, AI is a form of biomimicry which seeks solutions to human challenges by emulating natural time-tested patterns and strategies (e.g. the evolution of human brain, its computational skills and capacities). AI seeks to emulate natural intelligence. It is growing as a broad scientific and technological research and application field. One of the goals is that of creating autonomous, intelligently skilled and learning machines serving at least a function and/or a purpose.

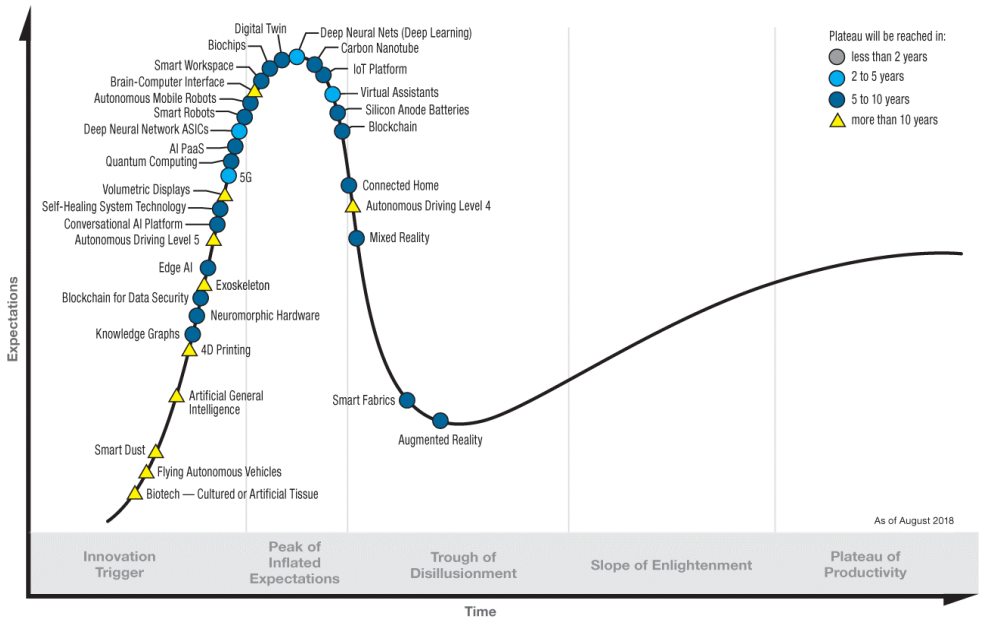
AI has started to affect the ways in which economies operate by shaping many aspects of contemporary businesses operations showing advances especially in genetic diagnostics, industrial automation, sales and marketing. The AI revolution is therefore building up its potential with significant economic, public, social and civic implications. In the social economy domain, AI may offer new opportunities to explore patterns, regularities, and even rules in data. This will allow to leverage data, text, sounds, images and patterns, regularities and rules within these objects of analysis. These new opportunities in detecting, measuring, recommending solutions to concrete problems may support better decision-making in tackling social and societal issues, increase efficiency of business operations and effectiveness of governmental policies.

In relation to our conceptual framework with operand and operant use of technology, the very underpinning 'cognitive' functions of AI (Russell & Norvig, 2016) implies that the technology can be integrated within the social economy organisations' operations as critical operant technology. For

example, it may be employed to support solving societal problems in new ways via pattern analysis and inference of big data. The intrinsic dynamic nature of the technology, which is becoming applicable to increasingly complex settings, implies that AI is opening new and unforeseen ways and applications. Tasks that in the past were only possible through the application of 'human intelligence' such as complex patterns recognition are increasingly becoming undertaken by advanced AI. Less complex tasks (e.g. optical character recognition) have now become routine. These may be performed by off-the-shelf, basic AI technology and are no longer considered to be advanced AI (McCorduck, 2004).

Emerging technologies are identified each year by Gartner and systematised in a **Hype Cycle** (Figure 22). They are based on high expectations in terms of market value and technology potential to disrupt business. The cycle refers to increased expectations especially in the first phase of 'innovation trigger'. After a 'peak of inflated expectations' there is often a phase of disillusionment where the gap between the expectations and the actual employability of technologies is taken into a more realistic perspective. Over time, we may reach a phase where some of the positive expectations are actually realised and the technology may begin to diffuse in the economy. Technology classifications such as Open Source Software and Big data analytics are no longer considered emerging; they have matured. Some of the advanced technologies object of our study can be located on the Hype Cycle of emerging technologies, Blockchain for instance. According to Figure 22 below, 'Blockchain' has passed the peak of expectations and entered a phase of disillusionment, although on the left-side we see 'Blockchain for Data Security' emerging as a new 'innovation trigger'.

Figure 22: Gartner Hype Cycle for Emerging Technologies (2018)



Source: Gartner (2018)[114]

Expectations differ between market and sectors in an economy. In this respect Teece (2018, p.1369) makes a difference between General Purpose Technologies (GPT) and enabling technologies. GPT: (1) are pervasive, i.e., in wide use; (2) are capable of ongoing technical improvement; and (3) enable complementary innovations in application sectors. Enabling technologies can be thought of as junior GPTs, meeting criteria (2) and (3) above, but not necessarily having measurable economy-wide impacts. Teece (2018) only considers economic purpose (addressing the business model aspects and appropriation conditions for profiting from innovation) and not the wider societal purposes of technologies such as social or societal impact.

[114] Available at: https://www.gartner.com/smarterwithgartner/5-trends-emerge-in-gartner-hype-cycle-for-emerging-technologies-2018/

The expectations for (disrupting) the social economy and societal impact may differ from expectations in terms of future market size and profitability. The value of emerging technologies for the social economy will change over time. "The subsequent improvements in an invention after its first introduction may be vastly more important, economically, than the initial availability of the invention in its original form" (Kline and Rosenberg, 1986, p. 283). This is likely to be true also in terms of social impact or societal importance of new technologies. The core competence of the social economy is not in scientific invention of new technologies, but **we expect the social economy to play an important role in directing subsequent changes in the technologies towards social and societal impacts.**

In the following sections, which are structured along our research questions (see section 1.2.1), we contextualise the contribution of advanced digital technologies to social economy impacts as described in our conceptual framework (Figure 7) and use information from the case studies to provide concrete empirical examples.

The results are structured by the technologies we have selected in advance. However, on the three technologies of Internet of Things, Big data and cloud computing, the findings do not allow nor justify a separate discussion because they have only in one or two cases been mentioned as being of high importance. This does not mean they are not relevant, or that the technology in question is not used. Many for instance use big data, but it seems to have already been integrated, e.g. when big data serves as input and Artificial Intelligence refers to output.

Cloud computing is used in several social economy cases, and there are digital platforms and apps that would not function without it. Yet, it has not been referred to as being of specific importance for the social economy. However, the function of collective use of shared computational resources fits very well with characteristics of the social economy and may prove to be increasingly important in serving members and clients of the social economy.

Internet of Things applications have been mentioned in a few cases. So far, it seems the most relevant for social economy are in the area of health and care for disabled people.

4.2 Contribution of advanced technology to social economy impact

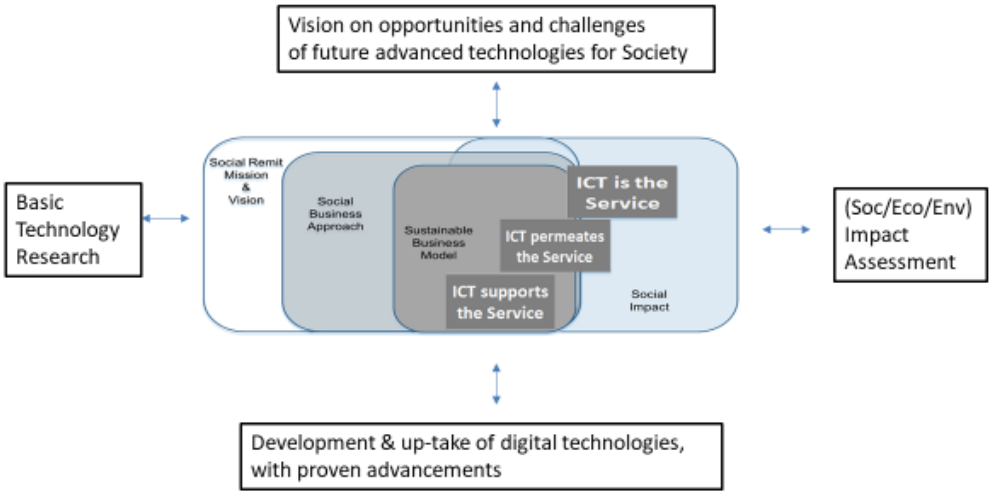
Expectations for (disrupting) the social economy and the societal impact of advanced technologies may differ from expectations which are merely expressed in terms of future market size and profits. The social economy typically considers expectations in terms of contribution to social value. In the words of (Mulgan, 2010) (p.41): "*Social value is not an objective fact. Instead, it emerges from the interaction of supply and demand, and therefore may change across time, people, places, and situations"*. Moreover, the social economy consists of organisations aiming for different kinds of social impact, and embedded in different societal, sectoral and/or geographical contexts.

The value(s), opportunities and challenges of the various advanced technologies for the social economy become **context dependent, and technologies are no longer neutral.** Impacts emerge in the form of intended (and unintended) consequences from applications in the social economy ecosystem. We analyse how this uptake contributes to the social economy's aims (values, missions and objectives), and how this develops in time. We therefore contextualise advanced technologies, the social economy and societal impact, by placing our conceptual framework (Figure 3) into the context of the social economy ecosystem (Figure 23), based on the insights from the different case studies and different national contexts.

The vision on the contribution, opportunities and challenges might differ for each single ***technology*** even if there are strong connections and interdependencies between technologies (complementarities). The next section is focussed on Open Source, DLT and AI. Regarding Internet of Things, Big Data and Cloud Computing, the case studies did not provide information allowing and/or justifying a separate discussion on these technologies. They have not been frequently mentioned as 'key' to the organisation of the social economy during the interviews, but Big Data and Cloud

Computing seem to have been already integrated in other mentioned advanced technologies. Only a few concrete examples based on Internet of Things have been mentioned.

Figure 23 Social Economy Ecosystem of advancing technology & impact



4.2.1 Open Source Technology

The results of our forward-looking survey among experts (Annex III) seem to indicate that the expectations for Open Source technology as future enabler in the social economy are very high. The philosophy of **open source** and open source communities **fits very well with the values and principles of the social economy.** In several case studies, promoting open source is firmly rooted in their mission (e.g. Libre Space Foundation, P2P Lab and Open Source School). Some only take on assignments that result in open source technology. Open Source has two related characteristics: 1) interoperability and 2) the use of open standards. These characteristics are important and relevant to many technological domains as we are entering the era of Web 3.0 and the Internet of Things & Services. Therefore, social economy organisations may establish collaborations and technological innovation activities around the open source paradigm reflecting the principles and values of the social economy.

For several Greek cases perhaps the most important characteristic of Open Source was considered the low cost (compared to proprietary commercial alternatives) for their clients in the social economy and included both software and hardware solutions. These were used by their clients in an operand mode, therefore enabling them to operate the same activities as proprietary software and hardware solutions but at a lower cost. The context of the economic crisis contributed to the appreciation of this characteristic of Open Source soft and hardware.

The concept of **commons** is a broader concept and relates also to Open Source communities (Ostrom, 1990). It refers to other resources which can be accessed for individual or collective use by members of a community. In case of creative commons also the use of each other's artistic expressions is promoted. Common use can also be facilitated in physical spaces and infrastructures. **Makerspaces, FabLabs, hackathon-spaces** and Do-It-Yourself-spaces are variations of this concept. A makerspace is a collaborative workspace inside a school/university, library, incubator, competence centre or separate public/private facility for making, learning, exploring and sharing technology tools. These spaces are open to citizens, students, and entrepreneurs and typically have a variety of maker equipment available, including 3D printers, laser cutters, CNC machines, soldering irons, etc. Several cases studied have such physical aspect related to common use and open soft and hardware.

These organisations and communities also make use of other open source networks and platforms where they share, co-operate and organise activities, such as github and the Open Source Initiative (OSI). The latter network has worked for over 20 years to raise awareness and adoption of open

source software and build bridges between open source communities of practice. The diversity among actors engaged in Open Source, and also their professionalism has increased over the years. New movements and new types of 'off-the-shelve' tools have emerged. With the help of no-code platforms, no-code tools are for instance becoming available. It is possible to develop software without writing any underlying code, so people who are not able to write code can develop the same applications as software engineers develop. New movements and tools are often known by the case study organisations and suggested to their 'clients', they for instance are often aware of good alternatives to mainstream corporate tech solutions, such as for instance DuckDuckGo which is an internet search engine that emphasizes protecting searchers' privacy. By not storing IP information, it is not profiling its users and they avoid the filter bubble of personalized search results.

Another example of a new movement is freeCodeCamp, a non-profit organisation that consists of an interactive learning web platform, an online community forum, chat rooms, online publications and local organizations that intend to make learning code and web development accessible to anyone.

Social economy enterprises can engage with open source technologies and open source communities for a variety of reasons. The following statements from SMEs in general, that are recorded by Glott (2013) illustrate features that are often attributed to Open Source Software (OSS) as motivation to use it:

- We like the philosophy of OSS and want to contribute to the OSS community
- We trust OSS more than proprietary software
- We find OSS more secure than proprietary software
- We like the ease of modification provided by OSS
- It helps us to reduce costs (we have to pay less)
- It helps us to reduce the price for our goods and services (our customers have to pay less)
- It helps us to avoid vendor lock-ins.

The motivations for using Open Source mentioned in our case studies in the social economy are mainly to lower costs for clients, avoid vendor lock-ins, and the philosophy and community aspect.

For the Social Economy, the **philosophy behind Open Source is more important** than for traditional for-profit enterprises in general. In several case studies promoting Open Source is part of their mission and values. P2P Lab is always open to collaborate with other individuals or organisations on a technological project, provided that the output will be open source. Promoting Open Source in this way is part of **community building and scaling**.

> *"in case a client agrees to release the technology under an open license then they would potentially receive a better offer than they would if they desired a strictly non-open source solution"*
>
> *Commons Lab*

Also, **the lower cost argument** is mentioned by several interviewees. Organisations that develop technological solutions for others in the Social Economy are motivated to develop low cost solutions. This is another reason why Commons Lab makes use of open source technology: "which is by definition of lower cost".

4.2.2 Distributed Ledger Technologies (including blockchain)

Expectations for Distributed Ledger Technologies (including blockchain) to act as an enabler in the social economy are rather low: only a third of our experts agree that it will be a key enabler in the next 15 years, while a fifth even disagree with the statement. The discussion is however too complex to be summarised in a simple rating of high or low. Perhaps the high expectations for cryptocurrencies like bitcoin for the social economy have indeed decreased, but by now there is a whole landscape of Distributed Ledger Technologies with a broad range of applications in the social economy. Stakeholders in these landscapes organise events (or platforms, such as the Dutch Blockchain

coalition) to raise awareness, identify stakeholders, map the ecosystem, discuss opportunities and challenges, demonstrate use-cases, suggest policy initiatives and update regulations.

It would be appropriate to initiate these activities at an early stage of the technology emergence and with a range of different stakeholders in society from a wider societal perspective. An example is the public hearing 'Blockchain: technology for the social economy 4.0' organised by the European Economic and Social Committee (EESC) on 29 May 2019[115] where opportunities and challenges for the social economy have been discussed from different angles: researchers, social economy start-ups, trade union, lab's, the European Commission and the European BlockTech Federation. Professor Stefano Epifani presented[116] a range of opportunities for DLTs and the social economy. The technology can, for instance, be used for the democratic and secure management of community decisions. A concrete example is the use of blockchain for the management of electronic voting processes on specific decisions by communities or individual cooperatives. In this respect, various characteristics of the Distributed Ledger Technologies fit very well with some characteristics of cooperatives and community initiatives and can certainly support current activities in an operand mode. The more operant use of DLT is likely to increase over time, depending on the interaction with the context in which it is used, and on the extent to which social impact is assessed.

A recent report of the EESC (2019)[117] mentions some applications of great interest to the social economy, including:

- tracing donations and fundraising. Donors would be able to follow the flow and destination of the money they donated to NGOs. NGOs, on the other hand, could report in detail on each expenditure stream, ensuring that money invested is actually used for the intended purpose;
- improving the governance of social economy organisations, making consultation of members and voting more secure and traceable, facilitating participation even where members are spread out geographically or too numerous to hold traditional general meetings;
- authenticating activities carried out at a distance by associations and cooperatives working in education and training or entertainment, or staging artistic and intellectual productions;
- certificating skills, ensuring the security of qualifications and diplomas in digital format;
- making intellectual property rights and copyright clearer and more certain, establishing "smart contracts" for the transfer of content;
- offering secure telemedicine and e-care systems. A great number of social economy organisations are involved in health care and social assistance. They are usually located in close proximity to the people in need, but they may operate in decentralised areas. Here these applications may have a considerable impact on people's quality of life;
- making agricultural products fully traceable and identifiable, preventing fraud and counterfeiting. Many agricultural cooperatives regard this application with great interest.

According to the EESC (2019), DLT and blockchain can be usefully applied to the social economy, but it is '*important to regulate them properly and gear them to benefits for all, allowing everyone to participate. […] We don't want to see a digital divide that creates more inequality and injustice. We don't want to see a new elite emerging, of people who are familiar with the new technologies and end up excluding others from the economy and the market*' (EESC, 2019).

In the case of the Community Coin Eindhoven, initiated by Possible Today Foundation (NL), it is evident that it is important that the various active participants from the community (including the City of Eindhoven, the Foundation IK WIL, and users who participated in the pilot phase) discuss

[115] https://www.eesc.europa.eu/en/agenda/our-events/events/blockchain-technology-social-economy-40where
[116] https://www.eesc.europa.eu/sites/default/files/files/blockchain.lles_en_-_epifani.pdf
[117] https://www.eesc.europa.eu/en/news-media/news/blockchain-can-have-multiple-applications-social-economy-must-not-create-new-digital-economy-elite-says-eesc

opportunities and challenges and share a vision on the potential of the technological solution as well as the social impact aimed for even if it is too early for an impact assessments.

Besides concrete examples of applications with societal benefits, there are also challenges (Aïda Ponce Del Castillo, 2019)[118] that generally apply to the use of DLT (including Blockchain):

- Ensuring the quality of the right information (the quality of the outcome of using DLT depends on the quality of the information that is entered: 'garbage in: garbage out');
- Solving accountability and governance of algorithms; (technology cannot be held accountable and algorithms may not diminish human rights and promote discrimination: 'computer says no');
- Complying with data protection rules; and
- Solving the energy and environmental costs (Blockchain suffers from high-energy and memory use).

4.2.3 Artificial Intelligence

Concerning Artificial Intelligence four main opportunities and risks are identified from an ethical 'AI-4-People' perspective (Floridi et al., 2018). The AI-4-people opportunities relate to four fundamental points in the understanding of human dignity and flourishing:

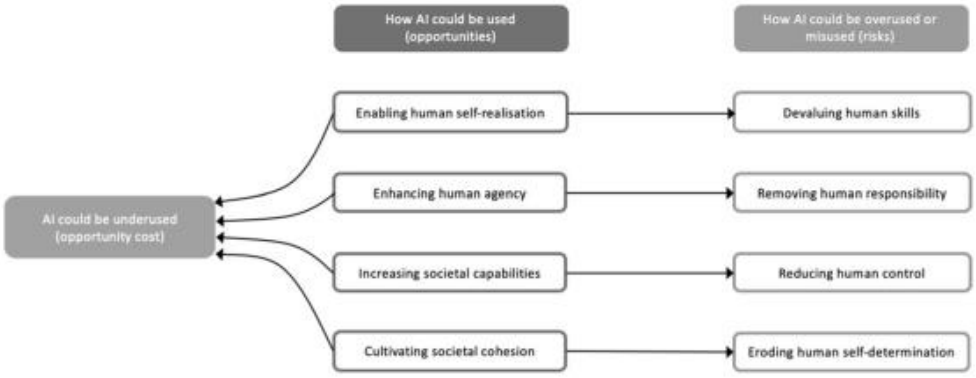
- who we can become (autonomous self-realisation);
- what we can do (human agency);
- what we can achieve (individual and societal capabilities); and
- how we can interact with each other and the world (societal cohesion).

Overuse or misuse has negative consequences, especially in terms of reducing human control. The social economy typically cares, or at least is more sensitive about such risks, more so in cases where there is no regulation because it could be counterproductive in generating the social impact. On the other hand, fear, ignorance, misplaced concerns or excessive reaction may lead a society to underuse AI technologies, which translates into societal opportunity costs. One of the recommendations of (Floridi et al., 2018) is to develop an EU oversight agency responsible for the protection of public welfare through the scientific evaluation and supervision of AI products, software, systems or services similar to the European Medicines Agency. Relatedly, a 'post-release' monitoring system for AI could be developed. As representative of the European civil society, the EESC (Muller, 2017) has undertaken and recommended to closely monitor developments of AI applications, not only from a technical perspective but specifically from an ethical, safety and societal perspective. The EESC currently identifies 11 areas where AI poses societal challenges: ethics; safety; privacy; transparency and accountability; work; education and skills; (in)equality and inclusiveness; law and regulations; governance and democracy; warfare; superintelligence. The EESC calls for: a human-in-command approach to AI; a code of ethics; a standardisation system for verifying, validating and monitoring AI systems; a European AI infrastructure consisting of open-source learning environments; promoting "responsible European AI systems" complete with European AI certification and labels.

Initiatives promoting good use of AI includes '**AI for Good**'. It is a global initiative involving the European AI ecosystem in contributing to positive impact projects through AI. The aim is to put AI at the service of social innovation to support the digital transformation of the humanitarian field and find concrete solutions to the pressing modern humanitarian issues. Topics comprise the fields of environment, health and education and activities include events where teams can pitch AI solutions. The AI for Good lab consists of spaces where people meet to develop prototype solutions.

[118] https://www.eesc.europa.eu/en/agenda/our-events/events/blockchain-technology-social-economy-40/presentations

Figure 24: Overview of four core opportunities offered by AI and four corresponding risks



Source: (Floridi et al., 2018) (p. 691)

Several concrete examples of the use of AI have been mentioned in the interviews with the case of *Academy Het Dorp*. Four technology topics are key to them: IoT, robotics, sensors (and everything related), serious gaming and virtual reality; "*and AI runs through all of these*". In this respect, we see also in other studies that AI is regarded as an increasingly broadened over-arching technology topic. *Academy Het Dorp* has a mission to support people with disabilities to be able to organize their own lives. The use of AI in automated driving with wheelchairs is a good example of all the four opportunities of AI mentioned by Floridi (Figure 24).

With an AI based self-driving wheelchair a disabled person's capability to move around in the village ('dorp' in Dutch) increases, which increases it's human and social capabilities.

Source: Academy Het Dorp

Concerning the risks of AI being over-used, many warn of over-dependency on the AI of a few dominating technology giants, who might be tempted to merely use AI for private profit or political gain instead of serving collective ends: Mazzucato (2019) calls for "*Preventing Digital Feudalism*"[119]. The social economy is engaged in serving collective ends and distributed governance therefore it could play a key role in directing technological change towards AI that creates value for people and reduces the risk of extracting value and abusing human rights.

"There is no reason to assume that many smaller Googles or Facebooks would operate differently or develop new, less exploitative algorithms. Creating an environment that rewards genuine value creation and punishes value extraction is the fundamental economic challenge of our time."

Mazzucato (2019)

4.3 In what ways can advanced digital technologies lead to innovation in the social economy?

All new technologies and new developments bring about new opportunities, and hence the potential for innovative uses and practices; also for the social economy. Exactly how and what will depend on the specific technology, as well as the goal, strategy and context of the specific initiatives. Case-studies interviews highlight this diversity and complexity of the interactions between stakeholders of initiatives and the (technological, sectoral, geographical) context of the eco-systems they operate in.

In the case of the Community Coin Eindhoven initiated by the Possible Today Foundation, the idea was to digitalise an analogue practice to strengthen civil society initiatives and the Eindhoven community. A blockchain application developed by Oxford researchers and piloted in Hull (UK) was licenced for a reasonable price. New innovations derived from interactions with partners within the initiative, e.g. the idea of their partner from the applied university to develop Social CVs **by integrating AI in the blockchain application as a new service to volunteers**. This indicates

[119] https://www.socialeurope.eu/preventing-digital-feudalism

that subsequent ideas for new uses of technology and complementary social economy initiatives will likely come from the ecosystem in which they are embedded, and the community they serve.

Each social economy organisation can interact, implement and utilise technologies in a different way, depending on their values, goals and strategies. Once set, the values and goals are hardly changing over time, but the strategies followed are multiple and often change. In terms of income streams and business models the case studies showed that there are often changes and several models are often applied at the same time. This business model dynamics and complexity is related to the preference of the social economy for **distributed governance** of input- and output-linkages in serving communities. The outputs should not be centralised, benefitting a happy few. But also the resources and funding should not come from a single source, since such a single source might dictate the direction, cause 'mission drift' and reduce autonomy.

Concerning the values and goals, one of the interviewees stated that "each technology is a cultural expression", rejecting the idea of technology as neutral. Thus, in the same ecosystem of actors, two social economy enterprises may use a new technology or an aspect of a technology differently and for different reasons. As a result, there are many different ways in which new technologies lead to innovations for the social economy as the **values of the actors are dominant in directing** the way technologies are applied and implemented.

We have to highlight that we selected technology-minded and **technology-enabled social economy case studies**. In general, the largest part of the social economy is less technology minded and/or technology enabled. This includes for instance those served by the cases we have studied. Not many social enterprises are pioneers at the technological frontier, but some are (e.g. Waag and Libre Space Foundation), and they fulfil a role as intermediates, serving others in the social economy and civil society which are less technology enabled.

For many interviewees it is important that during the uptake of technology there is a conscious process of considering (while experimenting) opportunities and risks, including implications for themselves and their social impact. Several interviewees have referred to tensions, dilemmas and discussions. These are carried on internally, with partners and with stakeholders. In the case study of the local exchange trading system TEM, initiated by citizens of the Greek city of Volos, reference is made to the complexity of internal decision-making. One of the difficulties had to do with varying social and political convictions among the members.

Different ways and different routes towards innovation become apparent from the following dilemma mentioned during interviews:

- develop an open source version which takes time and resources, or work with existing proprietary technology;
- safeguard economic sustainability, or avoid 'mission drift' from dependence on one investor or one source of public funding;
- better exploiting current knowledge of open-source or blockchain, or move with the technological frontier;
- orient on the future digital technology and potential impact, or work with existing, mature technology with proven impact.

One way in which the new technologies can be disruptive, is that they impact the social economy and its organisations in such a fundamental way, that it changes how the various actors interact, and processes are changed, or done in a completely new way (rather than minor changes or updates). In this respect, adopting advanced digital technology means adopting many uncertainties, as it may risk the very existence of organisations. Such uncertainties can favour conservatism and risk aversion. The fact that stakeholder management is an important characteristic of the social economy implies that considerations on the risks and benefits of technology adoption are taken seriously.

The disruption can also be more gradual, incremental and take more time. In the case of the Libre Space Foundation, the disruption of democratising space exploration and the resulting social impact may take indeed quite some time. In another case, the social economy enterprise collaborates with

an applied university where students do projects and hackathons, which serve scaling and diffusion in several ways. Several have taken a role at the technological frontier in doing research and raising awareness on the consequences of future technology. They do not produce and market new technology themselves, as they need to move with the frontier to the next future technology, e.g. quantum computers. For now, the societal impacts of many advanced digital technologies (such as quantum computers and space exploration) are not clear yet. For this social economy enterprise, it is better to have such discussions and involve citizens and the social economy at an early stage. This strategy is preferred to that of starting discussions ex-post when the negative 'side-effects' for citizens have already occurred. At this stage it becomes difficult to catch-up with commercial technology pioneers that may have succeeded and leveraged the so-called 'first-mover' advantages and established monopolistic circumstances.

A key contribution of new technologies for social economy initiatives is that initially they enable scaling up community building via digital (online) platforms. These digital platforms are key infrastructures for facilitating access to data, information and interactions among their members with various social value propositions, needs and demands. Typically, several technological features (blockchain, geolocation, fabrication labs) enhance the efficiency and effectiveness of social economy enterprises' by enabling matchmaking among propositions and demand. These have several advantages including:

- reducing transaction costs,
- reaching out to resources and demand, and
- engage into local, social and personal tech value creation experiments.

Another dimension is that with new technologies (e.g. blockchain) social and societal impact of consumer choices can be traced back and calculated. Information can be provided to consumers informing upon natural and social costs. In the case of Possible, there is an idea to add Artificial Intelligence to trace back social coin transactions in order to produce social CVs, which would serve a younger generation that wants to feature socially motivated experiences. As such, it could become an un-intended by-product of the blockchain application of the community coin.

Using advanced digital technology enables the provision of current services more efficiently, and to a smaller extent enables engagement in new and better services. Almost three out of 4 experts in our survey agreed that this latter type of enabling the social economy (i.e. more operant applications of digital technologies) will increase in the coming years.

4.3.1 Can advanced digital technologies enable new features of the social economy?

At the heart of the new digital developments are **access to data**; **ownership of technology; interoperability; and the scale and pace** at which the development of technology (or market, or social problem) is moving.

Social economy actors have the ambition to share and to leverage social impact, mostly by scaling-out. Scaling-up based on patents to protect ownership of technology and disrupt markets by extracting market value and accumulate it internally is not their aim. To some extent, however, it might be necessary to protect their intellectual property to maintain control on the distribution and use of new digital social technologies. For example, favouring organisations that operate according to similar values.

The shared mobility app of The Mobility Factory is available to members at development and operating costs. However, not just any other business can become member. "Membership is restricted to cooperatives that apply the seven principles outlined by the International Co-operative Alliance"

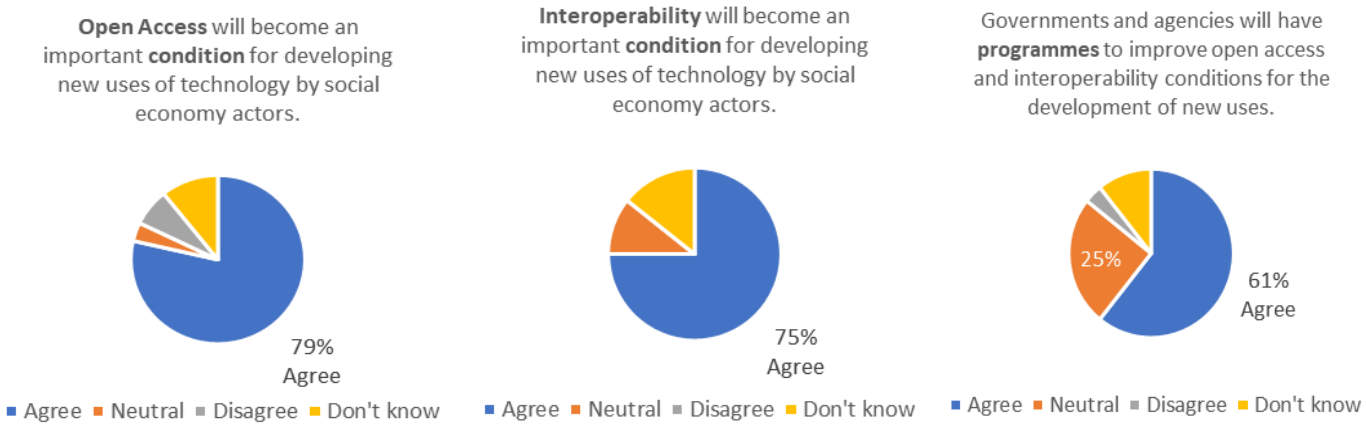
Source: https://www.themobilityfactory.eu/

Organisations in the social economy are willing to share and scale their organisation through cooperation. They are engaged in scaling their impact through decentralisation and diffusion. Three out of four experts in our survey agree with the statement that shared ownership of technology will

become more important for social economy actors than single ownership by an individual organisation in the future.

Open technologies (open source) does not mean "no rules", and the conditions to take into account for using the new technologies are the IPR rules related to the technologies. For social economy enterprises, it appears more important than for traditional business enterprises to consider **who controls the data and/or technology, and for instance any new uses of the data it generates**.

Figure 25: Open Access and Interoperability conditions for developing new uses of technology by social economy



Open technologies and disruptive technologies, if generic technologies, can promote new uses for the social economy, yet this condition would still require technological literacy, capability and **skills** at the side of social enterprises to absorb and customise for their own social value propositions and demand. However, many forms of **collaboration** between social enterprises and other stakeholders (e.g.: for-profit companies, citizens, governments and other social economy organisations) can serve to complement a lack in technological capabilities and skills, as can be derived from cases such as Open Lab Athens, P2P Lab, Open Source School, Commons Lab, ShareNL, and many others.

ShareNL collaborates with a network of technology companies. From prototype design to the development of global platforms, ShareNL works with **technology partners** that can tackle any scale of technology project. Cronos is such a collaborative group of 400 specialised IT companies. Combined, they share expertise in almost any field of technology, from cloud, web and mobile design to blockchain, artificial intelligence and internet of things. In this sense, social economy enterprises that want to take up advanced technologies so as to develop new uses and practices, may need intermediaries, platforms, like shareNL in the Netherlands; or the Labs (Open Lab, Commons Lab) in Greece that are specialised in Open Source tools for social economy actors.

4.3.2 How can technologies draw inspiration from practices of the social economy?

An important source of inspiration is that the social economy has a **wider range of values and goals**, generally attributed to a higher or overall purpose such as biodiversity, clean energy distribution, equal access to services such as housing, insurance, etc., compared to traditional focus on growth/productivity and the 'for-profit-only' economy. Additionally, to do so, the social economy focuses on community and community building. This aligns well with open (source) technologies and communities, and generally with platform technologies.

So far, sharing as a structure and process is one of the main inspirations drawn from social economy by technology, yet it requires community building and decentralisation. In this respect, distributed ledger technologies can provide support for shared responsibility and authentication.

Still, the surveyed experts agree with only a small majority that in the next 15 years social economy actors will be more engaged in studying, valorising and testing of emerging technologies in their early phases of development for their potential social impact. For *Academy Het Dorp* this is actually an increasingly important activity. Also, in terms of income streams, as technology developers from other sectors (e.g. automotive) use their core facility for testing at a commercial rate, since testing automated wheelchairs at *Academy Het Dorp* can also inspire the advancement of technology for automated driving on public roads. This means that collaborating with technology developers in other sectors, inside and outside the social economy may serve the social economy in terms of knowledge spill-overs and provide new business model innovation.

4.4 More insights from the case studies

In this section the cases on advanced technologies (excluding digital platforms: cf. chapter 3) are analysed by country. Identifying some **differences by country** helps in disentangling the influence of the context from which social economy initiatives emerge and develop from those characteristics of the actors and initiatives that matter for all actors, irrespective of the context in which they are embedded. The insights complement the descriptions that characterise the different national contexts (of Greece, Italy, Netherlands, and the UK), and it helps in identifying those contextual factors that play a role as drivers or obstacles to success.

From the short description of the case studies we can observe that the cases in the UK are particularly addressing social impact and inclusion for youth and the elderly. *Just Checking* is aimed at improving care for adults with dementia and learning difficulties. *HMR Circle* is also active in the area of supporting older people. *Mind of My Own' (MOMO)* and *Centrepoint* are addressing problems of young people. This so to say 'demographic' type of demarcation of beneficiaries seems less prominent in the Greek and Italian ecosystem. This is in line with the results of Wintjes et al. (2016) who show that in the Northwest of Europe social innovation initiatives more often address the needs of elderly and youth, which could relate to the different role of family and community in the welfare state regime in the Mediterranean (Ferrera, 1996). Different social issues call for different solutions and (to a certain extent) different enabling technologies. For example, offering solutions enabled by 3D printing and laser cutting to farming initiatives is more prominent in the Greek and Italian cases and they seem to fit their needs.

In the description of the Greek cases, the clients and beneficiaries are mostly other social economy organisations. Such an intermediary role within the social economy is actually the case in almost all initiatives we studied, since, **cooperation that is not mediated by markets**, is an important characteristic of the social economy. This is for instance apparent in their preference to develop open source solutions for their clients in the social economy, since the results can then also be used to serve others.

When analysing the Greek cases, the **technology developed often also includes products** and the organisations themselves also engage in production, for example with 3D printing technology. These elements of '**maker spaces', FabLabs and Do-It-Yourself (DIY)** are less prominent in the Dutch cases. *Academy Het Dorp* and *Waag* have also developed products but have not engaged in manufacturing these themselves. The reason for this might be that in a lower income context in Southern EU countries, the social economy has more often included in their mission to provide low cost alternatives for their clients, such as social economy farming cooperatives.

In the Dutch cases, governance principles are less explicitly mentioned as a factor explaining success in social entrepreneurship. When considering the UK and NL cases, there is a common element in the alignment towards the social missions of the local government. In the Greek cases, the importance of autonomy for citizens in relation to the government and markets seem more pronounced, although also in Greece the local government is often more in line with the social economy than the national state. This is also visible in the uptake of technology and how it happens: providing access to low cost products, based on open source technology tools such as products developed with 3-D printers for citizens and cooperative farming

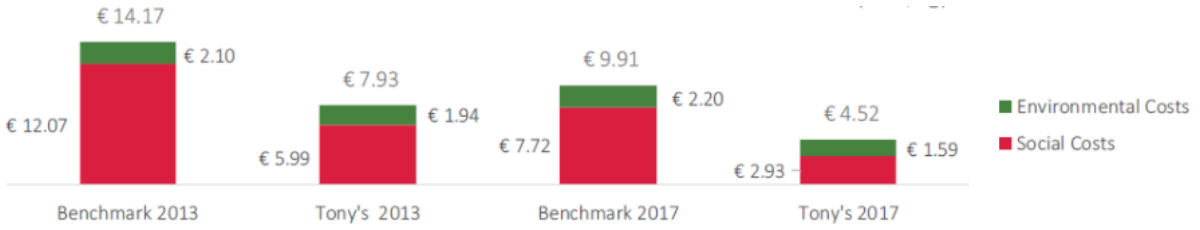
The legal entity of the enterprises also deviates from country to country. In Greece in two cases the success is even related to not having a legal form, but this rather relates to their preference for informal governance (and not to their digitalisation). In the Italian case of *Formichine,* the project represents a clear and working example of the District of Solidarity Economy (DES), defined as "local-based economic circuit, capable of enhancing the territorial resources according to criteria of social equity and socio-economic and environmental sustainability, for the creation of supply chains for financing, production, distribution and consumption of goods and services" (Legge Provinciale Trentino 13/2007). In that case, the benefits of the specific legal form did not relate to their use of digital technologies.

Especially in Greece, there are several cases where the main actors in the organisation have in parallel a job at a university and contribute to the social economy after working hours as **volunteers**. In Dutch cases, volunteers are important as well, however, less with respect to technological experts. *Community Coin Eindhoven* does not pay people from Applied University Fontys, but the experts of the university collaborate as part of their work. In the case of *Academy Het Dorp* they collaborate with universities, but not for their technological input for new digital products, but rather for scientific evaluation of impacts of the newly developed tools. In some Greek and Italian cases organisations develop very concrete technological tools and technological hardware that can be used by other social economy actors. They are not only developed, but also produced, often with 3D printers. A small majority of the surveyed experts agree that in the next 15 years, social economy actors will engage less in the development of new technologies and more in understanding how to use them for social impact.

For several cases in Greece and the UK, research grants have played a large role in the development of new technologies. In the Dutch cases, research grants have only become more recently one of the income streams. Especially in the Greek cases, developing and producing the (open source) technology themselves for clients in the social economy, e.g. farming cooperative, is one of the main activities (and often included in their mission), while in the Netherlands this is less often the case.

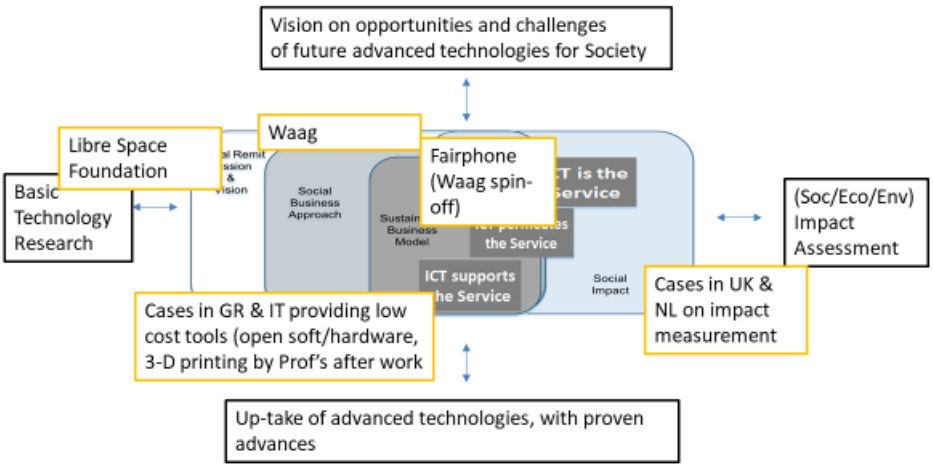
In several Greek cases, impact also includes academic impact. In the Dutch and especially the UK cases, measuring social impact (or cost) is more often included in the main activities of the organisations involved. For some organisations such as the *Impact Institute,* measuring is their core activity and it is enabled by technology. Measuring/estimating (and evaluating) is also the main approach in realising social impact. Users of the assessments (including those in the social economy) learn how to avoid negative impact and increase positive impact. For example, True Price measures and monetizes the societal costs, e.g. in terms of carbon footprint. It works for social enterprises like Tony's Chocolonely to show how far they have progressed in their mission to make their chocolate bars 100% slave-free. Furthermore, for-profit companies let Trueprice assess their social and environmental costs/impact and how they improve over time.

Figure 26 The social and environmental costs of cocoa production (EUR/kg) for Tony's Chocolonely and the industry benchmark for 2013 and 2017



Source: https://trueprice.org/author/driemiljoen/page/2/

Figure 27: Social Economy Ecosystem advancement of technology & impact (GR, NL, UK, IT cases)



The cases in Greece all refer to open software as an important enabling aspect. The **low-cost advantage for the users of Open Source-based solutions** seems to play a more important role than for cases in the UK, and especially than in the Netherlands.

UK cases have the highest ambitions and performances in terms of **scaling up**, that is: for every number mentioned (ranging from employees, budgets, grants, customers, beneficiaries, membership fee, etc.), these are at a higher scale than in the cases of the other countries.

In Greece, but also in the UK and IT, cases providing **training and education** to other social economy actors and citizens seem to be more common than in NL.

4.5 Drivers and obstacles to the uptake of advanced technologies

Regarding the uptake and integration of advanced digital technologies, the analysis points to certain enablers that drive the digital uptake in the social economy, and to obstacles or barriers. Five types of drivers/obstacles emerge:

Resources

- Among those social enterprises that performed R&D, lack of opportunities to get funding for R&D and innovation was emphasised in many cases. Due to the lack of national R&D funding, several Greek cases have mentioned that the importance of European Funding, e.g. from Horizon 2020, had increased. However, funding for more applied innovative activities (further from the technological frontier: prototyping, testing, and demonstrating) are often more important. In this respect, public funding for hackathons seems more relevant to promote uptake than funding basic R&D.

> *"Applied Universities have been and will become more important for us. Academic research (and for instance the H2020 research programme) is all focused on new drugs, but not on care.*
>
> *Source: Academy Het Dorp*

- Competition with others for funding grants is an obstacle mentioned frequently. Especially local governments have been important for funding; that is, funding in general. This seems related to an alignment of the social economy towards the social missions of the local government. Funding specifically for technological R&D or up-take of specific advanced digital technologies by social economy is rare, especially at local level.
- A distributed pattern of income streams is seen as enabling independency and autonomy. Dependency on a single source of funding, e.g. public funding, is in this respect seen as an obstacle to the social economy organisation's independence.

- Open Source Technology is seen as an important enabler in supporting clients in the social economy. We have mentioned the advantages that Open Source can have: advantages for clients and members in terms of low cost ICT soft or hardware, or for reducing the risk of vendor lock-in (e.g. becoming dependent on expensive soft-ware up-dates). The Greek cases - *Commons Lab* and *P2P Lab* - aim at low cost solutions that can be maintained autonomously by users, for example farmers. Also, in the case of Outlandish, less overhead and maintenance costs for their clients in the social economy is important.

> *"We aim to offer low cost solutions, open source technology is by definition of lower cost"*
>
> *Source: Commons lab*

- There is a role for public policy in funding and promoting open source and open access. Markets fail in producing it. Open access and interoperability are important conditions to promote distribution and uptake of technology for collective and societal purposes. As public goods, they call for public leadership. For instance, publicly funded R&D at universities or government research organisations should not be used to create proprietary technology that is transferred to the highest commercial bidder, as this could lead to monopolistic situations that are an obstacle for wider distribution and uptake by the social economy.

Education/training, **skills**

- In Greece, but also UK and IT, cases providing training and education to other social economy enterprises and citizens is among their main activities, e.g. for *La Scuola Open Source/SOS*.

> *"digital technologies are vastly used as knowledge base (content) and enabling tools to deliver courses and teach for instance the use of 3D printing, internet of things, electronic prototyping, digital manufacturing, coding, cybersecurity, etc."*
>
> *Source: La Scuola Open Source*

- Important policy role in involving students and public technology institutes to promote innovation in the social economy;
- Science has a role to play in providing advanced technologies and methods to assess social impact.

> *"we also work with robotic faculties for instance, but, overall, the role of knowledge institutes for us is mostly to validate the use and impact of technology: does it work for the patients and does it work for the people who deliver care."*
>
> *Source: Academy Het Dorp*

Recognition of social value and impact

- Sticking to certain social economy values and governance principles is often considered as a factor explaining their success and increased recognition.
- Lack of recognition is an obstacle for the social economy, and this relates to the difficulty to measure social impact. For some social economy organisations, measuring impact is their core activity, using advanced digital technology.

> *"True Price measures and monetizes the societal costs, e.g. in terms of a carbon footprint. It works for social enterprises like Tony's Chocolonely to show how far they have progressed in their mission to make their chocolate bars 100% slave-free."*
>
> *Source: Impact Institute*

- Others work with knowledge institutes to validate solutions and measure impact. Measuring and evaluating are important to increase recognition of societal impact. Monetising societal costs and benefits helps to increase recognition by investors and other stakeholders who make decisions based on monetary returns on investment. For example, by pricing CO_2, solutions producing less CO_2 get more recognition from investors.

Collaboration

- Close relations to external partners and the wider community serve as major drivers for the uptake and deployment of advanced technologies. Creating a collaborative ecosystem can compensate for lacking internal capabilities.
- Collaboration with those that share the same values is preferred; commercial clients often pay (higher) commercial prices. Many mentioned that they prefer to work with other organisations that share the same values and co-invest in development. Some exclude organisations as partners when they do not share the same values, whilst others adjust for instance the price, and typically charge higher commercial prices when providing services to governments or commercial companies;

> *"the team first analyses whether the project fits their ethical principles and then determines the commission it would seek"*
>
> *Source: Open Lab Athens*

- Collaboration is the preferred way of scaling in the social economy. This view on scaling is different from the so-called technology unicorns. Scaling-out in the form of diffusing technology and innovations via a collaborative network of similar local initiatives (e.g. energy cooperatives) is also a commonly used form of scaling through collaboration.
- Collaborative open methods of designing and developing solutions are often more important for success than the level of scientific excellence in coding. Collaboration with technology experts can provide necessary technological skills that are lacking within the organisation.

> *Both founders do not have a technological background, at least not in coding. The blockchain technology that was developed for the pilot in Hull (UK) was licensed for a test and learning platform for a year for a reasonable price. With the support of the Applied University Fontys, Foundation Possible wants to add artificial intelligence to the block-chain database.*
>
> *Source: Possible and Community Coin Eindhoven*

- Being selective or having a preference with who you work with is also evident in how intellectual property is handled. Although open source is often preferred, being too open limits the control on the distribution of knowledge. As in the case of HopHopFood the IPR was therefore placed under a private structure.

> *HopHopFood prefers using digital applications from non-profit companies; for example, instead of using Doodle they are using Framasoft. Intellectual Property is placed under a private company, in order to control who to share it with, "we are not naïve".*

- There are several cases where the main actors in the organisation have in parallel a position at a university and contribute to the social economy as volunteering digital experts in an informal way. In other cases, people at universities are formal partners and have paid jobs, as working with the social economy is recognised and institutionalised.
- It is important that the opportunities and challenges of advanced technologies are discussed at an early stage with stakeholders in the social economy and society at large (including for-profit companies and government);
- The process and organisation of innovation is complex, since there are many kinds of cooperation to access/develop/diffuse technology; for some, it works quite well to cooperate with private for-profit companies.

> *"many things available on the market, e.g. robots, are not fit to the needs of our target group, so we work together with companies to adapt them and make them fit for purpose"*
>
> *Source: Academy Het Dorp*

- As shown above the social economy has an important intermediary role in supporting civil society initiatives, in 'living-labs', FabLabs and Makerspaces, and in training and raising

awareness. Further interaction and collaboration with (especially local) governments and for-profit companies can further strengthen this role.

Regulations

Many social economy actors operate in sectors that are not regulated, or use, or develop new digital applications that are not regulated yet. Their social mission often implies that social enterprises regulate themselves. The self-regulation is an important point, related to what Nicholls & Murdock (2012, p.2) refer to as 'institutional entrepreneurship', since a transformation or disruption of the existing institutional set-up is often aimed for. Representatives of the social economy have in this respect called for a regulating authority for AI algorithms.

"The basic problem is that things that are on the market are often not appropriate or of insufficient quality to serve the needs of our target group [people with disabilities]. E.g. an Apple watch can measure your heartbeat but is not yet FDA approved. Also, many medical ethical and data issues often remain, that are not addressed for many solutions available on the market. For medical solutions such as drugs, there are very strict validation procedures, but not for care and all 'out-side-of-the-body' medical devices.

Source: Academy Het Dorp

The social economy is therefore a valuable counter force in validating, adopting and adapting new technology for society; as such, it is more important in directing technological change, than in terms of the rate of technological change. Changing the technology, or inventing new technology is often less important than how it is applied and used.

"the most innovative aspect of the initiative is not the technology itself but rather how it is designed and deployed"

Source: Open Lab Athens

Regulating technological change has long focused on increasing the supply of technology (push), and less on increasing the demand and up-take of technology (pull). There is a need for a 'social' alternative for 'R&D and innovation subsidies' to reward and promote discovery, experimentation, pilots and demonstration in the social economy[120]. Organising Hackathons therefore seem more relevant for promoting the uptake of advanced technologies in the social economy than subsidising technological R&D projects (which focus on the supply-side argument). Innovation in the social economy is rather based on entrepreneurial discovery than scientific discovery. Staid-aid rules have, for a long time, only allowed for subsidising pre-competitive R&D, leaving subsequent 'closer-to-market' innovation activities (that serve private commercial benefits) to the market. Promoting the up-take of specific new products or services with support from governments is still often not allowed, but to a certain extent the regulation has been updated, e.g.

With support from the Dutch government Odyssey organises each year the world's biggest blockchain & AI hackathon. In 48-hours teams develop prototype solutions, supported by all program partners, 200+ specialized experts, legal advisors, and financial regulators. In the past three years, more than 230 working prototypes have emerged from the program, of which 30% are developed further towards adoption or have been adopted.

Source: https://www.odyssey.org/odyssey-hackathon/

[120] The theoretical argument for R&D subsidies is that companies invest below the socially optimal level. This imperfection argument may also apply for the uptake and use of technology by the social economy.

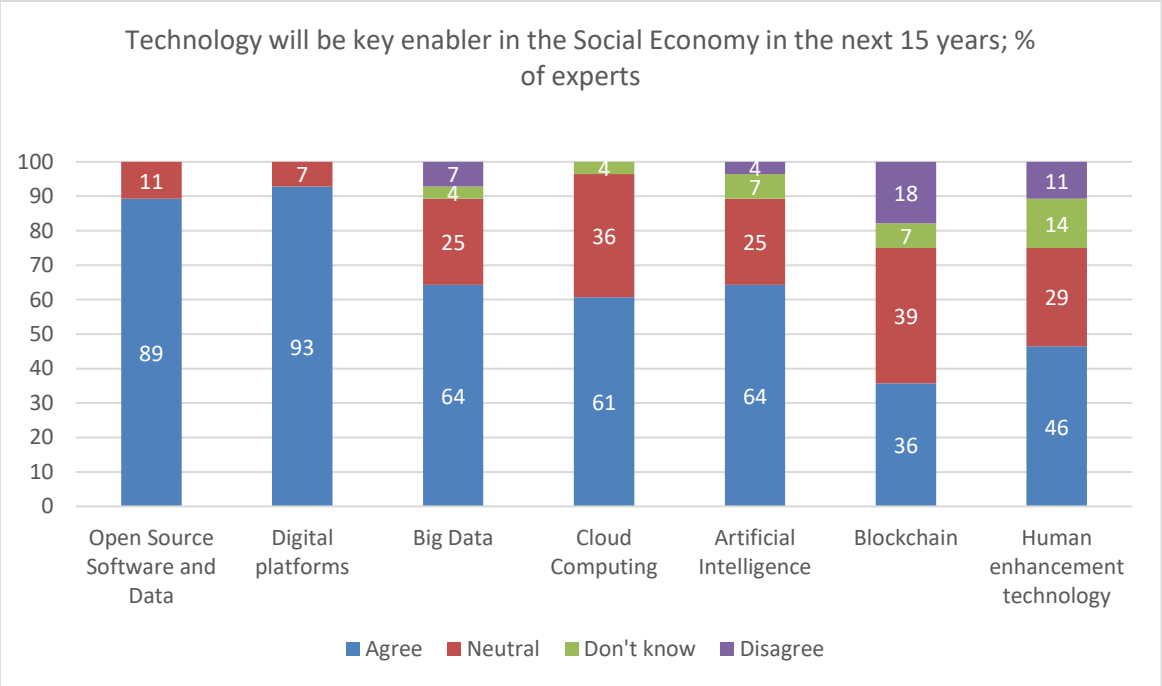
with respect to 'experimental development''[121]. Also, the rules on aid to 'innovation clusters' are relevant for the social economy[122].

4.6 Trends and future prospects: how advanced technologies may be geared towards the next generation of social entrepreneurs and the new social economy?

The surveyed experts have the highest expectations for digital platforms, as 93% agree it will be a key enabling technology for the social economy in the next 15 years. The expectations for Open Source Software and Data are similarly high (89% agree). Although Open Source has not been as disruptive to commercial software as expected a few decades ago, it still holds very high promises for the social economy in the next 15 years.

For Big Data, Cloud Computing and Artificial Intelligence, 61% to 64% of the experts agree that it will be a key enabler for the social economy in the next 15 years. The expectations for Human Enhancement Technology[123] among experts are even higher than for Blockchain. Some of these human enhancement technologies are, according to Gartner Hype cycle 2018, not yet at the peak of expectations. Among the experts we surveyed, quite some people had to tick the option 'do not know'.

Figure 28: Technology will be key enabler in the Social Economy in the next 15 years?



[121] "Experimental development may comprise prototyping, demonstrating, piloting, testing and validation of new or improved products, processes or services in environments representative of real life operating conditions where the primary objective is to make further technical improvements on products, processes or services that are not substantially set." COMMUNICATION FROM THE COMMISSION Framework for State aid for research and development and innovation (2014/C 198/01, pp. 5); available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2014.198.01.0001.01.ENG

[122] Definition 15 (s) "'innovation clusters' means structures or organised groups of independent parties (such as innovative start-ups, small, medium and large enterprises, as well as research and knowledge dissemination organisations, non-for-profit organisations and other related economic actors) designed to stimulate innovative activity by promoting sharing of facilities and exchange of knowledge and expertise and by contributing effectively to knowledge transfer, networking, information dissemination and collaboration among the undertakings and other organisations in the cluster" (Commission, 2014).

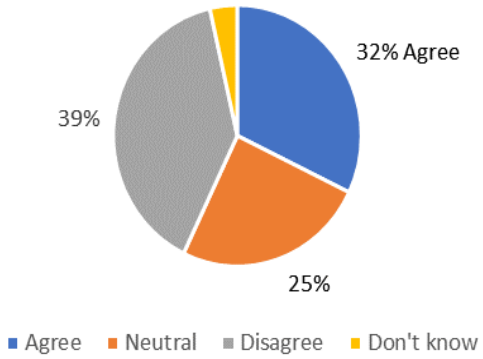
[123] Technological alteration of the human body in order to enhance physical or mental capabilities. Emerging Human Enhancement Technologies include: human genetic engineering (gene therapy), neurotechnology (neural implants and brain–computer interfaces), cyberware, nanomedicine, and 3D bioprinting.

A better understanding of the impact that new technologies and digitisation have, or can have, on the social economy and social economy enterprises is very important for the uptake and scaling of social impact expected. Better understanding comes from exploring new avenues of digital/ICT-Enabled social innovation practices or exploiting existing technologies. It also comes from the knowledge disseminated by many of the tech-minded case studies we interviewed for this study.

Currently, however the new technology that is geared towards social entrepreneurs and the social economy is often not yet 'fit for purpose'. Who will transform the technology and make it fit for social and societal purposes and societal impacts? The social economy or the public sector? There are clear arguments for joint (co-funded) efforts.

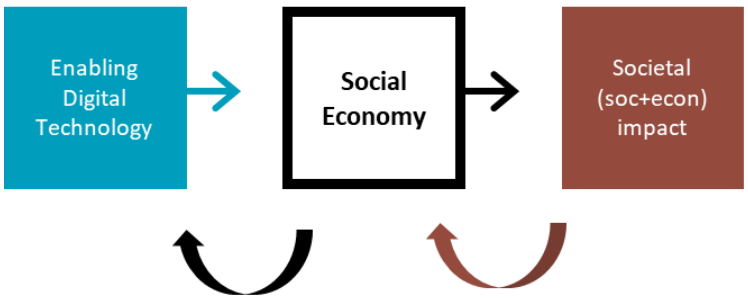
According to the experts surveyed, technology development in the future will still, to a large extent, remain motivated by private profit. This suggests that the 'double-bottom' line situation for the social economy will remain. The problem of sustainability will not be solved exclusively by technology even if it will play an important role.

Figure 29: Technology development will be much more driven by motivations for achieving social and societal impact rather than for private profit?



By improved self-organisation of innovation processes within the social economy, it could aim for increased autonomy and develop its 'own technology', independent from other actors, such as public technology institutes and for-profit companies.

Figure 30: Innovation with feed-back-loops: co-evolution trough social economy

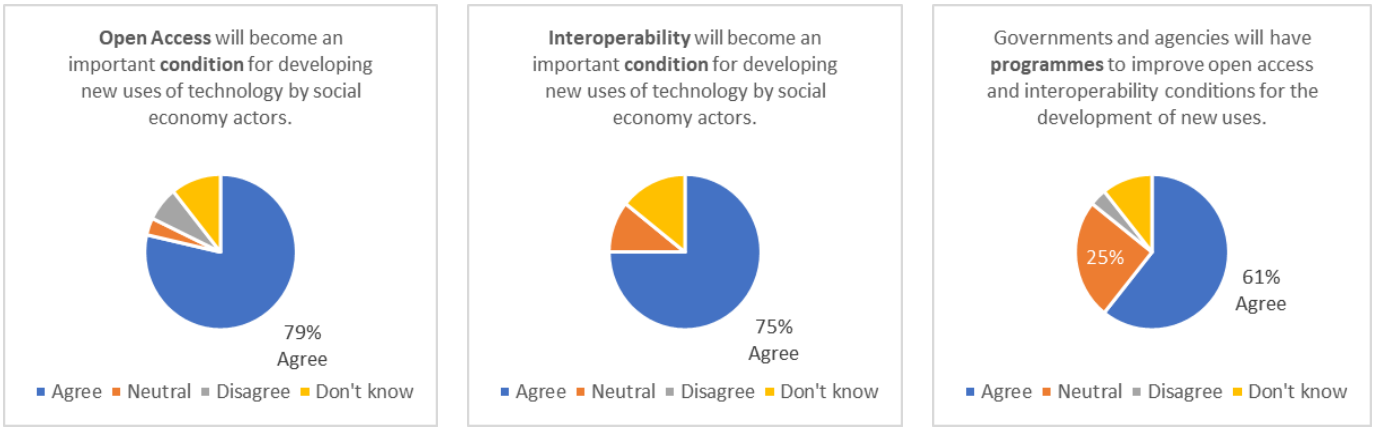


Open Access and interoperability will become important conditions for developing new uses of technology by social economy actors. However, among the surveyed experts there is quite some doubt that governments will develop programmes aimed at improving these technological conditions. The promises of Open Source and Data could still rely on its own communities. Policy options to promote these conditions could be to:

- innovate IPR regulations;
- improve standard setting procedures;

- involve students, education and public research institutes in the development of Open technologies;
- promote these conditions in existing public research and innovation programmes (e.g. HORIZON 2020).

Figure 31: Open Access and Interoperability as conditions for new uses of technology by social economy



The social economy wants to share and scale its organisation through cooperation and scale impact or to duplicate via decentralisation. Shared ownership of technology between different social enterprises (for example shared ownership of technology for citizens' cooperative platforms) will, according to our surveyed experts, become more important for social economy actors in the future.

A question remains on the extent to which the public and private actors (as the other stakeholders in society) will be inclusive towards the social economy and vice versa. Governments certainly have the capabilities to empower the social economy in its efforts to develop new technological uses, but actors in the private sector may also be willing to collaborate and empower social economy initiatives. The appropriate ways to democratise and distribute the technology and innovation processes probably differs between counties and fields of social impact.

5 ROLE AND INFLUENCE OF PUBLIC POLICIES IN SHAPING AN E-ENVIRONMENT FOR SOCIAL ECONOMY: KEY POINTS AND RECOMMENDATIONS

5.1 The role of digital platforms and advanced technologies in the social economy

In this final chapter, we bring together the insights from the findings of the study including our review of evidence from the literature, country analyses, good practices and expert contributions. In particular, in the following discussion we provide a synthesis of the findings highlighting:

i) suggestions for social economy actors embarking in the digital transformation or starting up a digital social enterprise;
ii) synergies that may be obtained by
   - combining different technological solutions;
   - acknowledging the different purposes of the digital transformation (i.e. social, economic, societal),
   - fostering collaborations between different stakeholders in society/economy;
iii) key policy recommendations, addressing the different level of government and policy (EU, national, local).

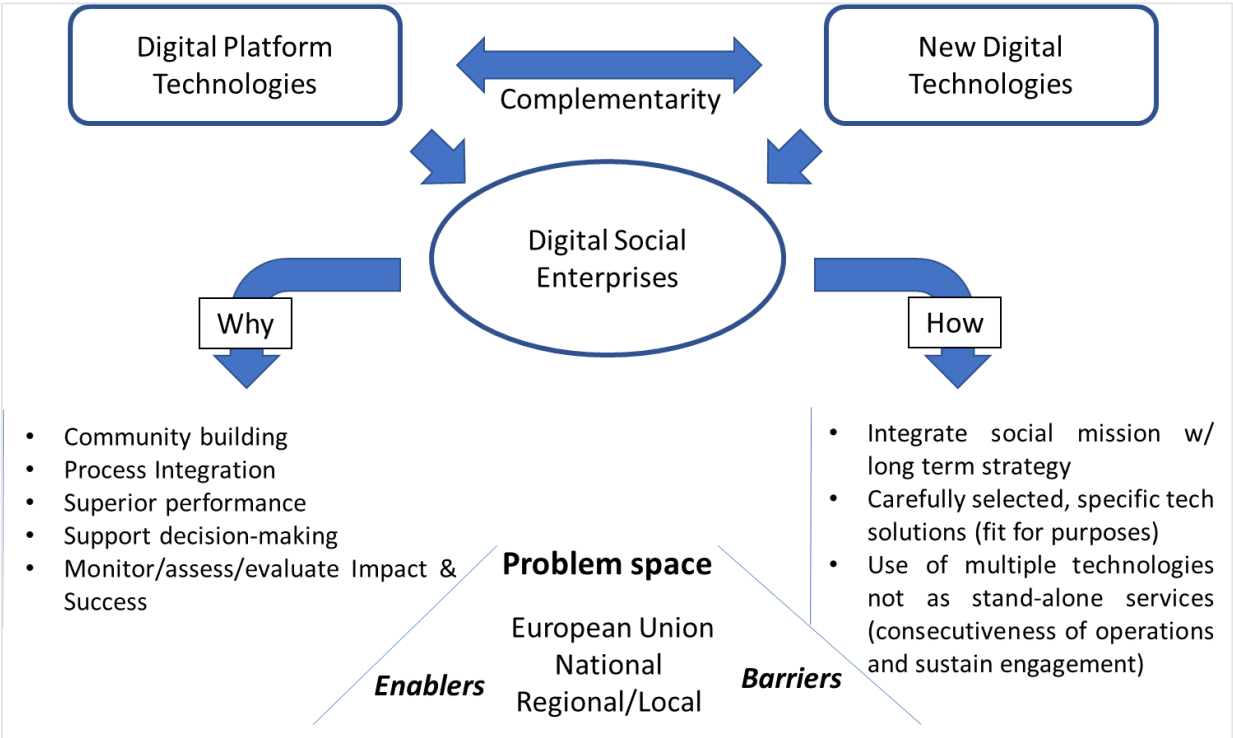
The digital transformation and the constitution of a digital social economy is not just a process driven by technological or social innovation. As argued in chapter 2, it is a long-term perspective involving social economy organisations using digital technologies to promote economic viability of their operations through the adoption of tech-related business models for new social value propositions. For digital social start-ups, which have the chance to '**think digitally first'**, their digital strategy should be integrated within the business models from the onset. This way, a social start-up may foster its social mission and vision by enacting the business idea - the digital social business approach - with a long-term impact perspective.

In the course of the study, focus was placed on the potential and use of digital platforms and advanced technologies in the social economy.

Figure ***32*** provides an interpretative framework of the digital transformation of the social economy highlighting that digital platforms and advanced technologies are complementary[124] in this process.

[124] Specific complementarities are highlighted in the next section, consisting in the advantages obtained from combining different technologies, which are higher than those achieved from using technologies in isolation.

Figure 32: Explanatory policy framework



Source: own elaboration

Figure 32 also offers a summary of the reasons why digital platforms and advanced technologies may be adopted and what they are able to add to the value proposition of the social economy. It also highlights how the social economy may capitalise on the opportunities offered by new digital technologies, including open source and disruptive ones.

5.1.1 Complementarity between platform technologies and advanced digital technologies

The list of **'how to'** highlights critical principles a social economy organisation should take into consideration when implementing its digital strategy. Development and diffusion of digital platforms and advanced technologies within the social economy is functional to the growth of activities and reach and the creation of new technology-based value propositions.

There are two observations underscoring the importance of complementarity between technologies within the social economy. The first concerns the **fast growing of the digital global society**, fuelled and sustained by leveraging opportunities offered by the combination of different technologies. For example, a platform economy grows much quicker in scope and reach when integrating the various functionalities offered by complementary new technologies. These include, amongst many others, location and mapping technologies for providing efficient logistics for users and beneficiaries, digital media and entertainment applications for enhanced dissemination of content and engagement, and Artificial Intelligence for providing advanced digital services and helping with the processing of large amounts of data. Important to note that Distributed Ledger Technologies (DLTs) constitute the backbone of most advanced energy cooperative platforms, while DLTs - and blockchain in particular - are being deployed to ensure transparency in the use of third parties' funds and donations or for providing secure identifications and documentation services for migrants.

The second observation concerns directly the effectiveness of the digital transformation of the social economy organisations. In particular, **combining and integrating technologies offers opportunities for growth (scale-up, scale-out or replicate) that are superior than those offered by single technologies used for specific functions**. This is evidenced by the fact that all

the digital social economy organisations analysed in the course of this assignment have (or are considering to) introduced new and more advanced digital solutions integrating them with other technologies already in use within their activities. In particular, we showed that the 'entry point' of digital technologies is often a response to specific operational needs of the organisation. At this stage, the technologies adopted are deployed for specific purposes, for example stock and fleet management software solutions, or members' and users' management systems. The digital transformation usually progresses further in order to scale up/out to include other aspects, for example logistic and operations and eventually support new products and services for members and users. During this process, we saw that social economy organisations are embarked on a learning curve that brings them to experiment with and introduce other complementary technologies. These help them to streamline operations, advance new value propositions and eventually grow. In most of our study cases, organisations that are relying on specific technologies to foster their mission and vision (i.e. a digital platform structure or DLT and blockchain, AI, etc.) are doing so by gradually integrating complementary technologies to enhance their social value proposition.[125]

Digital platforms offer unprecedented opportunities for engagement and networking. These technologies may be used to meet virtually, make new contacts and extend the sphere of interactions beyond physical reach. Platforms enable the formation of virtual communities of not necessarily co-located individuals. In particular, the work of digital platform cooperatives is key in showcasing the possibilities and opportunities offered. Within this technological and governance model, their social economy principles and values (owned by its members and democratically governed) may be enacted through digital technologies. This can happen through mobile applications or by setting operational protocols that may be used in many different social domains (i.e. sales of products and services but also education, social services, environmental education and civic and environmental campaigns). These may be achieved whilst upholding the principles and values of the traditional cooperative movement. Fairness and equitable social and economic landscape may, therefore, be completed with more modern and pressing social objectives: digital community inclusiveness through using technologies to provide voice and visibility to disadvantaged people or promote social and societal objective, privacy and data sovereignty through setting up operations centred upon users (user-centric) needs and products; services and content may be designed to safeguard the rights and wellbeing of users who have full control on how their personal data and information are dealt with.

5.1.2 Why digitalise?

With reference to the conceptual model developed in chapter 2, technological and social innovations are fostered by social digital platforms and advanced technologies. **The potential offered by social platforms and advanced technologies in ramping up reach and engagement may help the social economy to pursue more effectively its mission and vision and become (more) sustainable over time**.

This aspect is evidenced by many successful cases. By building operations upon a digital platform, a social economy organisation may access more users and eventually a larger market to build its own success. Such is the case of the Fairbnb cooperative, which originated and operates in major Italian cities, such as Venice and Bologna, and is already established in several European cities including London, Amsterdam, Valencia and Barcelona. The coop is set to activate about 120 destinations aiming for a 10% of a market populated by established digital booking companies. The business model is similar to for-profit online booking operators but Fairbnb's revenue is reinvested within the cooperative (50%) and in community projects (50%).

Digital platforms and advanced technologies may also be used to support decision-making processes, monitoring, assessment and impact evaluation (i.e. measuring social and environmental impacts). Several off-the-shelf software solutions are available for such tasks including business-oriented

[125] An example illustrating this point is available in Annex II: an energy cooperative – via blockchain – introduces a bespoke digital social economy platform model to build a community of users and propose enhanced or new services and products. The rationale is to increase the range of services and stakeholders' engagement. To foster further engagement and continuance of engagement, metering, charging and payment technologies and other applications are also integrated.

Enterprise Resource Planning (ERP) software solutions such as SAP (SAP.com) and Board (software.board.com). Assoconnect (assoconnect.com), for example, has a series of integrated tools for many activities linked to social economy organisations from accounting, memembership management, donations etc.. Relevant applications are also increasingly available for social economy organisations, such as the Digital Decision Tools (cdt.org), developed by the Centre for Democracy and Technology, Impactreporting (impactreporting.co.uk), which libraries of tools – such as impact dashboard, social impact canvasses and impact management (socialimpact.tools) – are provided under Open Source licensing options.

In terms of collaborative and distributed deliberations, several software suites are available. For example, Open Source applications such as Loomio (loomio.org) may easily be used for these scopefor collaborations and distributed deliberations.

All considered, these technologies offer opportunities to support the social economy towards achieving more effectively and efficiently valuable output, outcomes and impact. Overall, digital technologies may greatly help to increase the visibility of the social economy, attract investors and favour networking with potential collaborators. These aspects are critical for extending social reach and promoting longer-term growth strategies.

5.1.3 How to set out a digital strategy

As to the **'how to'**, the adoption of digital social economy platforms and advanced technologies (such as AI, DLTs and blockchain, Big Data and Analytics, IoT) could and should be seen as a way to enhance internal operations and interactions with the outside world. In relation to our conceptual framework (cf. *Figure 7: Operationalisation of digital technologies (ICTs) contribution to social economy impact*), the digital transformation of the social economy has the potential to blend more efficiently the social missions of social economy organisations, including social enterprises, with the determination of their long-term strategies. Of course, this ultimately requires a solid business orientation and a forward-looking approach to digitisation.

To this extent, **the digital strategy of a social economy organisation** should not rely on single technological applications, perhaps taken off-the-shelf, but **explore how technological combinations may be integrated within the workflow to maximise the benefits**. This may be a process concerning:

1) **efficiency-driven modernisation** of the organisation (using technologies in an operand/supporting way),
2) **digitalisation of internal operations** and integration of services to capitalise on efficiency and effectiveness gains or
3) **digital transformation** of the social economy enterprise's core products and services (introducing technologies as operant/integrated within the workflow).

To implement any of these digital innovation models, specialist applications and digital technologies should be considered within the wider approach of the social economy organisation and not be used as a stand-alone service. This is a widely applied principle in the platform economy, as discussed in chapter 3, greatly enhanced by integrating advanced technologies, as showcased in chapter 4.

Efficiency-driven digitalisation strategies may be initiated by integrating resources already in place within the organisation. In these cases, the social economy organisation identifies a specific area that wishes to improve its operation, and accordingly selects a technology (usually off-the-shelf) to address its need. In such cases, only basic skills or ICT knowledge is required by its members. An illustrative example is Formichine. It began by moving operational activities upon a digital platform. In particular, operations and resources such as products, calendar, volunteers and staff rotas were taken up digitally rather than on traditional supports. Datasets management and a matchmaking engine were developed in order to integrate ancillary operations together with core activities. Operations upon such digital platform became rather agile: the platform was set up by the

management, but day-to-day activities and operations require that staff have only basic ICT competences such as on line skills (sign-up and search) and basic form-filling training.

Digitalisation of internal operations and integration of services is accomplished by organising a variety of operations upon a technology infrastructure. This strategy implies that the social economy organisation is considering digitalising parts of its operations, via off-the-shelf or customised solutions, and to this end a team of ICT literate people – within and/or external to the social economy organisation – are required. For example, HMR Circle supports older and frail people to live independently by providing on-demand face-to-face services and relies on a varied community of helpers (part-time and full-time staff and volunteers with different skills and competences) to provide such services. Reducing internal complexities was paramount to its efficient and effective operations and a software solution in the form of a closed customer relationship management (CRM) digital platform revealed appropriate for the scope. HMR Circle's management had already experience with such digital tool and therefore was relatively straightforward to tailor made a CRM platform to respond to its needs. Moreover, to extend the range of services provided to the community, HMR Circle is progressing to integrate other bespoke services such as a transport app with tailor made features. The operations on this digital infrastructure are carried out by specifically trained staff who maintain individual face-to-face interactions with the community.

Technologies are integrated at the core of activities as operant and fully integrated in the workflow. In these cases, the business model of the social economy organisation relies on technologies, and these are necessary for its operations. Usually, such level of integration requires the capabilities of skilled ICT people. These can be either internal and/or sourced externally, to ensure compliance of technologies with the organisation's mission and vision, and operations. In these cases, the combination and integration of digital technologies (platforms, AI, IoT, DLTs and blockchain, Big Data, etc.) are of paramount importance to the improvement of services offered and scaling of operations. For example, the Possible Today Foundation / Community Coins Eindhoven in the Netherlands operates a digital volunteering platform with integrated blockchain technology. The founders of the organisation did not have an advanced technology/digital background; collaborating with universities and other 'Tech for Good' organisations managed to set out the volunteering platform, inspired by the work of Greek timebanks. The platform records volunteers' time and rewards them with Community Coins to be redeemed at local retailers in the form of discounts. The digital volunteering platform was obtained under licence from a technology start-up, Value-Squared, operating in the UK. Together with Fontys University of Applied Science and Stichting Ik Wil the foundation is piloting and testing the scheme widely. Again, with the support of Fontys University, the foundation is setting up to deploy Artificial Intelligence to build up a CV application for its volunteers.

The basic idea is that advanced technologies (AI, IoT, DLTs and blockchain, Big Data) provides specific high-level digital services and they may be efficiently integrated upon digital platforms. **Digital platform technologies constitute the virtual infrastructure of the social network and plug-ins and advanced technologies are necessary to conclude transactions successfully and securely.** This means increasing '*consecutiveness*' of operations so that all – or most of the – processes may be performed upon the platform. These include interaction with other users, members and beneficiaries, access to digital resources (i.e. maps, referrals, recommendations etc.), selection of products/services, payments and rating. This entails using several service applications to sustain engagement, ensure continuity, positive interactions and streamline internal processes. These then contribute to the long-term sustainability of operations and therefore of the social undertakings.

5.1.4 Some critical considerations in implementing a digital strategy

The principle of **capitalising on complementarities between technological solutions and applications is extremely important but might not be sufficient to guarantee optimal reach of social impact**.

Form the technical side, interoperability between different technological solutions assumes particular importance when planning to integrate several 'plug-ins' technologies. At the design and implementation stages, it is also important to **consider not just internal processes but also interactions with the users, members, beneficiaries and other stakeholders.** This is especially the cases where the activities in the social economy are based on individual and personal relations within a community, society or closed membership such as a cooperative- a very common occurrence in the provision of social services.

The digital strategy needs to integrate offline activities within digital organisational process in order to benefits from the efficiency gained from of a digital - lean organisation.

An offline / online balance enables effectiveness in addressing the needs of those that are not connected or lack the necessary skills to connect. The message is that to increase the possibilities offered by digitalisation, the social economy entrepreneur needs to devise and implement new 'offline/ online' ways to address personal relations tailored to the specific situations within which it operates.

Therefore, there should be alignment between technical and organisational requirements. We have seen many cases in which social economy organisations "*carefully select the digital tool(s) to exploit as they must be properly adjusted to their needs and more importantly to the needs and characteristics of their beneficiaries"* (cit. interviewee). This also makes it important to *"keep-it-simple"* (cit. interviewee). This is because the success of a social economy initiative usually depends on the quality as well as the quantity of interactions with a variety of users and beneficiaries. Not all users and beneficiaries may have the same level of digital literacy or the same means and access to new digital technologies.

A distinction should be made about whether the social economy initiative is at the start-up phase or is already established. New social economy initiatives may be starting up and operating with a 'digital' mindset oriented towards social/societal issues with the assistance of or by means of technology. They may be able to **'think digitally first'**. Existing organisations might transform gradually the way in which they function by introducing technologies in support of their operations. Therefore, there is a difference in the degree in which new social economy entrepreneurs and already established social economy organisations may interpret the digital transformation and the use of technology to generate added value within their innovative processes and the provision of social/societal impact.

In some circumstances, for example in highly skill-intensive professional services, off-line/face-to-face interactions might be more appropriate or indeed they may be the only option available. During the course of the study, it was highlighted that when accuracy, compliance with regulations or human and social values are at play, **people's professionalism, values and principles may not be fully automated or standardised**. Regulatory technologies, such as anti-fraud and risk management, are currently being developed and deployed in sectors such as digital finance and banking or the pharmaceutical sector for monitoring, compliance and reporting. The introduction of such technologies in those sectors is promoting large cost-savings and restructuring of operations. Nonetheless, for the reasons we have discussed in chapter 4, these technologies are not yet available for use in the social economy. In such cases, whilst digitalisation may have positive effects on the management and growth of the social economy, the additional costs linked to such specialist technologies - or the quality standards of affordable solutions - may hinder the digital transformation of the social economy.

There is a further issue to be brought to the attention of the reader. It concerns the **poor tolerance for failure**. At the start-up phase, digitally enabled social economy organisations (as well as any type of social and for-profit enterprise) incur high probabilities of failure. Digital social economy start-ups might fail because they are not capable of addressing social needs through a sustainable/economic business mentality (business plan) or business model. Others might fail because they are not able to connect with their users, be they members, beneficiaries or the wider community for whom the services are intended. This means that they may not be able to frame the social/societal problem correctly in terms of target group, market potential and/or intervention approach. In fact, team management skills, social entrepreneurship skills, knowledge on how to connect digital technologies to address an issue that affects a specific community are all possible causes of failure. **To minimise failure, it is necessary to close the gap that exists in the skill sets of social entrepreneurs**.

Another critical consideration should be addressing the necessary **investments for the design and implementation of a digital strategy**. Nonetheless, apart from basic digital applications, we should highlight that advanced technologies may not be readily available to social economy organisation to pick up and use. There are certainly substantial gains and opportunities to adopt and operate with the support of these technologies, however they require substantial investments in terms of knowledge and capabilities to learn and operate as well as financial availability to access them. It is true, for example that many digital platform architectures (Programmableweb/Mulesoft) and other digital technologies may be available in Open Source, therefore the financial commitment may be contained. It is also true that there are many e-learning training packages and self-assessment tools which may be particularly beneficial to social economy actors. However, these require substantial investment in terms of time and resource to allow for the necessary knowledge to master these technologies to build and capabilities to accumulate. From our interviews and workshop, we gathered that often social economy organisations face the trade-off between investing their time and effort in learning and setting up a digitalisation strategy and responding to their social mission. They, almost always, respond to the latter rather than the former. It is therefore paramount that investments of resources in knowledge and capacity building as well as financial issues necessary for the digital transformation of the social economy should be very high in the policy agenda. We shall discuss these issues later on in the chapter.

5.2 A policy framework for a digital social economy: enablers, barriers and policy approaches

The integration of new digital technologies within the social economy is radically changing organisational processes and is enhancing social impact through the introduction of a stream of digital social and technological innovations. The reigning hypothesis is that the digital transformation will have a positive effect on the organisation of the social economy and the provision of innovative products and services digitally. The pervasive effects of digital technologies, the rapid diffusion of the digital platform economy and the application of advanced technologies in most sectors of the economy and society is supporting this hypothesis. In fact, these technologies have already changed the landscape of the global economy whereby 7 out of the 10 largest global corporations conduct their business though a digital model based on platform and advanced technologies.

Nonetheless, in the whole of the economy "*only 1.7 % of enterprises in the EU make full use of advanced digital technologies, while 41 % do not use them at all*"[126]. This statement refers to the overall economy, which is formed by over 99% by small and medium sized enterprises (including social economy enterprises). Concerning the social economy, even in a country such as the UK which scores particular high in the Digital Economy and Society Index (DESI, 2019) and with a population of social economy enterprises of circa 100,000 units, the number of fully digital social economy enterprises is of about 500 and 45% are still in the seed/start-up stage (TechNation.io, Report 2019). The Netherlands, another high scoring DESI (2019) country, has a population of social economy organisations of less than 61,000 entities and some of the most technology advanced social economy organisations in Europe yet the total number of digital enabled organisations may be estimated in no more than a few hundreds. In countries scoring much lower in the latest DESI (2019), such as Greece, the relative proportion of digitally enabled social economy enterprises and initiatives is sensibly lower. In Italy, with a population of social economy organisations comparable to that of the UK (circa 94,000), innovative (technology intensive) start-ups with a social vocation (SIAVS) are very limited in number (circa 200, by the end of 2019).

This means that so far, we have not witnessed such radical disruptions in the social economy. The European social economy comprises a great majority of social economy organisations including social enterprises based on traditional organisational and management practices and ICTs and the

[126] "Turning Europe digital, preparing for future growth", Speech by Vice-President of the European Commission A. Ansip at the European Policy Centre in Brussels on 14/04/2015. Available at https://ec.europa.eu/commission/presscorner/detail/de/SPEECH_15_4770

digitisation process have only affected their daily practices marginally. They are accomplishing social and societal impact by integrating ICTs and digital technologies at various levels within their internal organisational and management practices and in relation with the external stakeholders, users and beneficiaries.

Nonetheless, we can see brewing experimentation which, to date, is still far from making an impact on the social economy as a whole. In the present study, we have approached only a limited number of start-ups, as the focus has been mainly on successful and technology intensive social economy initiatives. Though, we collected evidence that many digital social start-ups are in fact struggling to survive over the inception period, at the same time, we can see that there is a small group of digital social enterprises engaged in various branches. They produce tangible social outcomes and setting the course for innovative undertakings.

Our literature review, consultations with experts and case study analyses evidence that there is a drive towards integrating new digital technologies in the value creation process and in transforming technological advances to improve commercial performance. We identified cases where digital technologies were integrated in the daily operations of social economy organisations in order to optimise processes, such as on line sales channels or communications. Even in successful cases, whereby social economy enterprises managed the transition or the application of digital technologies within their organisations, we found evidence that there are longstanding and emerging digital needs, which, for technical, financial or organisational reasons, go unmet.

We argue that presenting the digital transformation of the social economy in terms of application and integration of digital platforms and advanced technologies may shift the focus from the identification of the appropriate level of intervention, which as we have seen in the previous sections is rather complex and systemic in nature. In particular, it was evidenced that the digital transformation of the social economy involves the creation and support of a multilevel – multi-factor system. This means that, the digitalisation process associated with the growth and inclusiveness of the social economy rests on a number of aspects – framework conditions, knowledge and learning in social entrepreneurship and technology, reputation and acknowledgement of the role of the social economy. These factors are critical to the digital transformation of the social economy and any shortcomings may either slow down the digital transformation process or provide challenges to social economy entrepreneurs. These challenges may be summarised by:

- a poor recognition, at all levels, of the economic and non-economic values of the social economy in modern societies. Even within the enterprise, often the added value is not recognised or seen as low priority;
- lack of resources to integrate and devise appropriate digital business models;
- lack of specialist skills and competences for the digital social economy;
- lack of knowledge about low-cost and off-the-shelf tools for basic business functions;
- under-utilisation of collaborative ventures amongst stakeholders (pooling resources for investment) and
- non harmonised laws and regulations pertaining the social economy across the Union.

These factors, discussed in the reminder, are intertwined and affecting directly and indirectly social economy operations and its digital transformation and growth vis-a-vis its social and societal impact. The problem space is also multilevel because of the many governance levels involved in driving or spearheading initiatives, activities and policies.

5.2.1 The levels of analysis: EU, national and local

The **European Union** is the ideal context to promote the values of the social economy and for high level policy intervention in matters regarding the digital social economy. The collaborative effort of the Member States within high-level European institutions has already brought to near completion the formation of the Digital Single Market. The challenge of making EU initiatives aware and

responsive to the needs of the social economy are still present, even when the various executive agencies are working towards promoting the values of the social economy and ensuring a social economy-friendly environment.

Importantly, European institutions coordinate the drive towards the digital transformation through various initiatives, such as the European platform of national initiatives for the industrial digital transformation, the Digital Innovation Hubs, setting out a regulatory framework fit for the digital age and preparing Europeans for a digital future. The European network of Digital Innovation Hubs, for example, is particularly well-placed to provide support for the social economy to promote digitalisation of their processes, products and services since its objectives concern directly issues encountered by the social economy in terms of skills and training, support to find investments, and research and innovation capacity embedded within an innovative ecosystem. Moreover, its organisation is distributed across several member States and operates at a regional level. Nonetheless, the experts and the social economy organisations consulted, confirmed the view that the national and regional Digital Innovation Hubs may play a significant role in steering and supporting local digitalisation strategies even if they are mostly focused on digital/technological innovation for the business economy rather than digital social innovation for the social economy. Of course, noticeable exceptions are evidenced in blockchain[127] and Open Source[128] in terms of their social and environmental impact and, notably, the 4P DIH[129] (Slovenia).

European institutions are also stimulating cross-national collaborations in research and innovation through large collaborative R&I projects including organisations from the social economy (i.e. through the HORIZON, ESIF, INTERREG and other collaborative programmes). This aspect, as we shall soon see, is critical given that social economy organisations are not naturally involved in structured R&D activities (with some exceptions). Although inventing and appropriating new technologies is hardly the core competence or the mission of the social economy, research and experimentation are absolutely vital when dealing with and shaping new emerging technologies, figuring out their potential and actual uses, and 'bending' them to the principles and values of the social economy.

The **national level** is the appropriate - or natural - "playground" whereby regulations and institutional actions may provide the building blocks or the framework conditions for the creation of a friendly social economy ecosystem. Here, we refer to the delivery of suitable digital infrastructure (national digital infrastructure programmes enabling 5G, WIFI hotspots in remote or rural areas, etc.).. At the national level, it is possible to consider those aspects of the digital transformation of society and the economy including the social economy by introducing them not only in the main economic and industrial hot spots.

Moreover, having identified particular sets of skills (cf. *Figure 8: Skills requirements for the digital social economy enterprise*) as priorities for the digitisation of the social economy, the national level – through national curricula setting – appears to be the appropriate level within which we may discuss issues related to driving general and specific upskilling campaigns. In this case, for example, we have seen that technologies may open a range of new opportunities compared to traditional upskilling campaigns. **Areas under serious budgetary constraints (such as remote or rural areas) may drive their upskilling strategy through social economy actors operating in the education** and training in digital commons, through the implementation of physical creative commons spaces in collaboration with other institutional actors such as schools and skill centres.

We have also identified the **local level** and, in particular, **local governments as appropriate actors to take up the role of community managers**. Local government, having direct experience of the local social needs and resources, are in a better position to discern among social impact models that may foster local communities' welfare. They have an important role to play in 'selecting' or 'filtering' desired initiatives. Local governments have the opportunity to bring digital technologies to citizens and the community by linking to more central or international parties and facilitate local FabLabs, co-working spaces and other forms of commons such as the chamber of commons

[127] https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=65202
[128] https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=63811
[129] http://4pdih.com/en/home/

(https://chamberofcommons.waag.org/). Local governments can play important roles in catalysing such local activities by promoting their engagement and bringing them together through creating local technology partnerships involving social actors and schools and vocational/training institutions.

5.3 Enablers and barriers

In the remainder of this chapter, we shall provide our insights for constructive policies contextualised in the findings of our research. As in chapters 3 and 4, we also used in this section the narrative of enablers/barriers to tease out those elements of the social economy ecosystem. Here, the policy process in intended as actions and initiatives that may sustain or support the social economy and the activities of social economy organisations (enablers). The reverse side of the narrative focuses on identifying the obstacles that are currently frustrating growth and limiting impact expectations and the digital transformation of the social economy (barriers). The aim is to deliver on the interpretation of the sector's digitisation process through identifying those areas that are most likely to have an impact on the digital transformation of the European social economy.

An overarching and known issue consists in the '**recognition of the roles and contribution of the social economy**'. This issue affects many aspects of the social economy including its digital transformation and extends its effects over the main drivers and barriers identified.

We grouped these drivers and barriers as such. 1) **Access to Resources**, including resources for research and innovation as well as to market and revenue streams. 2) **Education and Learning**, including professional and users' digital skills and digital social entrepreneurship competences obtainable either through formal education programmes or through coaching and learning-by-doing. 3) **Collaborations**, including those with other organisations of the social economy, with traditional businesses, with universities and government agencies. 4) Finally, we identified **Laws and Regulations** concerning the social economy as a critical issue (i.e. harmonisation of social economy organisation legal definitions across EU Member States).

5.3.1 Recognising the roles and contributions of the social economy within national and European contexts

Having a modern and digitally/technology enabled social economy is an invaluable asset in a modern knowledge-based economy. The social economy is a key player in society, its weight is important not just in terms of economic indicators which, as we have seen, is particularly significant, but also in terms of its contributions to the entire economy and wellbeing of citizens and a key partner in tackling societal challenges.

Proper recognition of **the primacy of the social economy within national societies has the potential to yield important advantages.** It requires appropriate ring-fenced spaces as well as its integration **into the national industrial strategies or as an active stakeholder in research, technology & innovation programmes.** In these circumstances, the social economy does contribute to technological inclusiveness and achieve cumulative benefits from knowledge and technology transfer. All this, whilst actively involved as a research and innovation agent. The points we are making here have been largely demonstrated. Many social economy organisations are valuable and effective research and innovation performers as evidenced in several large collaborative programmes and projects EU and nation-wide.

This aspect supports the hypothesis that advancing the digital transformation would produce a social economy fit for a modern digital knowledge economy. On the other hand, a modern social economy may become an attractive career option for *tech-savvy* digital natives who may find employment, career prospects and entrepreneurial avenues and, in a virtuous circle, contribute to its own innovativeness.

There are however several critical barriers. Perhaps the two most important ones concern the **perception by public authorities of the specific role and activities of social economy enterprises and their impact on the economy and society**. In some cases, it was reported, public authorities cannot understand what a social economy organisation or a social enterprise is

actually doing, for what reason and certainly when it comes to social use of technologies. This translates into poor access to public procurement and contracting, poor visibility in investment circles and eventually in social economy organisations being side-lined. The lack of a clear framework for the establishment and operation within the social economy negatively affects recognition and acknowledgement by society, investors and policymakers. This is another reason for which, awareness campaign, training and education should be extended also to key stakeholders and the general public. **Highlighting the economic and social value through objective metrics and validating the impact of the social economy may initiate virtuous cycles in society that would, directly or indirectly, foster the digitisation of social economy.**

5.3.2 Access to Resources: enablers and barriers to the digital transformation of the social economy

'*Resources*' involves financial resources and expenditures of social economy organisations devolved to the digitisation of operations. These resources may be procured through 1) investing own funds 2) from revenue streams (i.e. by reinvesting profits), 3) through external investments (by public or private investors buying in the social economy venture), 4) through subsidies (public) and sponsoring (private donations and philanthropy), and 5) through access on the financial markets (credit).

Some of the cases we studied obtained research grants, but several have mentioned how difficult it is to access valuable funding, for example, from the European Commission's Research and Innovation Framework Programmes (i.e. HORIZON2020). They stated that projects and applicants are mainly select on the basis of scientific excellence and only a handful of social economy organisation can demonstrate these characteristics, whilst many such organisations are actively engaged in the field and provide excellent research resources and access. Moreover, social economy organisations reported that they might have been excluded from some HORIZON2020 calls due to their not-for-profit nature, even though they are engaged in economic activities. To this end, perhaps, European funds for regional development may seem more appropriate as they are oriented to promoting the uptake of technologies and digital transformation of SMEs.

Social economy start-ups may have an advantage in the digital transformation by setting off and design/integrate a digital strategy within their nascent operations, upon the digital infrastructure available, by **thinking digitally first**. However, sources of financing may be limited to the entrepreneur's own funds or investors', since a start-up may not have revenues to reinvest or collaterals to secure bank loans. For established social economy organisations, including social enterprises, willing or planning to digitalise their activities is a different matter. They may attempt to use all four main financial channels. Nonetheless, whilst in recent years funding for digitalisation has grown from different sources (i.e. digitalisation vouchers and grants), there is still a large gap between what is available and what is needed.

Therefore, the most prominent **barrier to access to resources** for the digital transformation of the social economy concerns funding or **the scarcity of funding sources**. As we have seen in chapters 3 and 4, funding for the digital transformation may be used for technology acquisition and research & innovation. That is, to acquire technologies (off-the-shelf) and/or develop them internally (though experimentation and development activities) or in cooperation with other stakeholders.

Almost no country has a specific digital strategy or has enacted supportive policy in this direction for the social economy. On the one hand, this means that social economy organisations should find access to 'regular' companies support measures. On the other hand, specific needs of the social economy go unmet since there is little integration of these in national industrial/digital strategies[130].

Social economy enterprises are not often considered an attractive investment by private investors and social investments are somehow scarce. There seems to be a structural failure

[130] The recent OECD report (Aisenberg, Heikkilä, Noya, & Santos, 2019) with reference to the Netherlands, shows that digital aspects are absent from policy good practices and recommendations in support of social entrepreneurship.

in the availability of funding sources; in particular, it lacks wider variety/types of funding mechanisms that may be available to for-profit businesses, albeit access to finance may be somewhat constrained/limited for these as well. Of course, some social start-ups and other social economy organisations may be gathering private investments, or are indeed particularly sought after by social investors, but this remain an exception rather than a diffused practice.

To this end, the European Commission launched under the European Fund for Employment and Social Innovation a loan instrument[131] to boost the lending capacity of microfinance institutions and social enterprise lenders in Europe. Whilst this is an important channel for social enterprises, it remains largely unavailable to the wider social economy. Such scheme has the potential to affect the digital transformation by unlocking necessary technology investments and focus on more targeted technology-driven initiatives with high social impact potential as in the case of the Italian SIAVS[132].

As identified in the cases interviewed, an important source of income for the social economy consists in public tendering and procurement of goods and services by public administrations, especially innovation procurement, that is those forms of procurement which have as objectives the delivery of a new innovation. For example, **bids from social economy enterprises on regional, national and even in EU programmes should (also) be assessed in terms of their social impact[133].** This is a route undertaken already in many places, though with little success to date: for example, the UK government has adopted such a practice as depicted by the 2012 and 2013 Social Value Act. Since its original approval, the Social Value Act has been 're-launched' several times[134].

Recommendation in the area of securing investments for digital social innovation would require alternative ways to assess efficacy and effectiveness of innovation procurement activities. Once technological/digital solutions are evaluated, they may be escalated in full contracting with social economy organisation. This process would assure that social economy organisation have resources for research and development of digital technologies and revenues from public procurement contracts.

In other words, **innovation procurement may be viewed as an innovation policy avenue.** Linking digitisation of the social economy to innovation procurement may be a powerful multiplier of digital investments in the social economy. **Public procurement of innovation needs to be designed in order to open new opportunities for the social economy and level the playing field with for-profit enterprises.**

New forms of funding are also emerging: **impact financing/investing**. In the last decade private investors have begun to search for investment opportunities that would also address social, societal and environmental challenges. The idea is to invest in charitable or environmental ventures for a return on investments (Bugg-Levine & Emerson, 2011). These comprise microfinance investors, green-tech ventures, low-income housing and other activities carried out by private and institutional investors (including public equity) linked to social and societal impact generation[135]. In terms of social

[131] The *EaSI Funded Instrument* aims to improve access to finance for micro-enterprises, including the self-employed, those that employ vulnerable people and social enterprises to support job creation and social inclusion. The loan fund is a partnership between the EU, the European Investment Bank and the European Investment Fund. Apart from the EaSI Funded Instrument, the *EaSI Guarantee* – with an overall budget of €96 million – is available for interested microcredit providers and social enterprises for reaching out to entrepreneurs. Further information available at https://ec.europa.eu/social/main.jsp?catId=1081&langId=en

[132] Start-ups with a social vocation

[133] Many of such provisions are already considered in procurement regulations; however, these are not implemented or taken up by local procurement agencies. See for example: https://www.socialplatform.org/public-procurement/ and a recent publication (McEvoy, 2019)

[134] This principle has been undertaken also by the EU allowing public procurement agencies across Member State to include provisions and clauses for social value. Apart from various uptake at the municipal and local level, a comprehensive evaluation of the impact of this policy is still amiss.

[135] A recent study by McKinsey (2018) shows that impact investments are not dissimilar in terms of revenue and time to exit. In practice, returns on investment between 2010 and 2015 are on average 10% and time to exit is around 5 years. These indicators compare favourably to traditional equity investment. Nonetheless, the total value of investment is rather limited, and impact investments are in fact a small fraction of private equity investment (in particular they are estimated to be around $300bn worldwide, versus $3Tr in 2020).

economy areas, these investments are currently identified in agriculture, clean energy, education, microfinance (financial inclusion) and healthcare and most have a high technology content.

More specific to research and innovation, it may be appropriate to strengthen and extend the several Small Business Innovation Research programmes available in many Member States and make them more accessible by the social economy. In the countries under the purview of this studies we have seen that SBIR-types programmes, which have been in place for some time, are beneficial also for the social economy (i.e. in the Netherlands and in the UK). On the same principles, the Operational Programme "Competitiveness, Entrepreneurship and Innovation" (EPAnEK) in Greece, aims to enhance competitiveness and outreach of Greek businesses, with a shift towards high calibre entrepreneurship spearheaded by innovation and higher domestic added value. These types of initiatives may provide valuable opportunities for the social economy.

Regarding **capital/technology investments**, the question concerns how different funding streams may impact the social economy. As we have seen with reference to digital social economy platforms (in chapter 3) and advanced digital technologies (in chapter 4) social economy organisations, in order to protect their independence, are very reluctant to rely on single sources of funding. For this reason, apart from traditional funding sources, alternative financing is becoming increasingly popular. **Crowdfunding** is one of the most popular and relevant ways of financing social ventures. **Civic crowdfunding** - a subtype of crowdfunding whereby citizens, sometimes in collaboration with local governments, collect and fund local regeneration projects - is becoming a significant reality in many post-industrial cities.

Nonetheless, there is also an increasing need for other forms of private funds that could use market instruments. The involvement of **for-profit ventures** has been highlighted. For example, social economy organisations may seek and find support from large companies. There is in fact a role for social economy intermediaries to act in such a role. The SocialTechno case study, available in Annex II, is very illustrative of this approach. SocialTechno - member of the TechSoup Global Network - promotes technological development within the Italian social economy by matching (inter)national ICT companies and software vendors, like Microsoft, with social enterprises in an attempt to bring mainstream digital technologies to the social economy. To these cases we should add that that there is a need for technologies development fit for the social economy. Big players, technology companies and digital business should be motivated to design tech for good in cooperation with SE trough consortia (https://www.deeptechforgood.eu/).

The establishment of more **social-public-private partnerships**[136] or consortia, including members from the government, the for-profit sector as well as social economy organisations, can be considered an enabler. The Scottish Government is engaged in 6 such strategic partnerships investing some £3.5 mil from 2012 to 2018. These have been employed to re-design social services and their delivery in key strategic areas, such as mitigate the chances of re-offending, local/community transport partnerships, in health & social care, lifelong learning for adults with learning disabilities and recovery from substance abuse.

A mix of financing mechanisms (leveraging both structural funds as well as private investments) **on EU and national levels** can provide significant support for the long-term sustainability of the social economy, and therefore valuable financial provisions to enact an effective digitalisation strategy. The €260m Fund-of-Funds programme in Greece (EquiFund), launched in December 2016 and managed by the European Investment Fund (EIF), aims to boost entrepreneurship and create a lasting impact on local businesses, by attracting private funding to all investment stages of the local equity market, ranging from entrepreneurship steps even before the early stage start-ups up to mature, growing

[136] "*Public Social Partnerships (PSPs) are voluntary partnerships involving one or more organisations from the public and third sectors, and potentially from the private sector. They are designed to involve the third sector earlier and more deeply in the design and commissioning of public services.*" https://www.gov.scot/policies/third-sector/public-social-partnerships/. A detailed report, containing also examples of digital initiatives is available at: https://www.gov.scot/publications/report-date-strategic-public-social-partnership-psp-model-scotland/

companies. It foresees to pave the way for unleashing the social and economic wealth-creation of young talented human capital in Greece and its diaspora[137].

Funding mechanisms relying on **tax incentives** of various natures (i.e. tax-breaks or investment support or vouchers) already have substantial applications for capital investments for social digitisation. For example, in the UK, a 30% tax deduction is allowed on high-tech investments in social enterprises. This measure was implemented to favour investments within the social economy leveraging successfully tested initiatives launched for private investments in high-growth tech companies (SEIS – EIS – Tax rebate[138]). Other forms of public support may also leverage capabilities available within the local economy by developing and establishing incentive programs to help *pro-bono* social economy enterprises to implement a digital strategy (through coaching and the provision of digital technologies) or enact tax incentives for transferring digital technologies and expertise from the private sector to the social economy (i.e. **technology transfer of software solutions or on-the-job training**). For example, in France the legislation on Mécénat de compétences provides up to 60% tax incentive to private companies that "lend" (for free) their staff and dismissed ICT equipment to social enterprises. By doing so, private companies transfer their knowledge through their employees to the social enterprises providing exceptional resources for digitisation.

These strategies may be used to introduce digital technologies within the social economy. Though, we have to take into account that established social economy organisations may be looking at different ways to digitalise operations compared to start-ups. We have to take into account that the introduction of digital technologies within an organisation may have different forms. In a substantial minority of cases, notably in technology-based social economy organisations, technologies are developed or adapted in house. But, in the majority of cases, technologies are bought in from the market, via intermediaries, consultants or other social-tech organisations (see also 5.3.3 below).

Important sources of investments may derive directly from **investors' increased awareness of digital social ventures as potential recipients of support**. In fact, establishing **European and national** prize competitions for social enterprises (social innovation bootcamps, hackathons, etc.) with a variety of stakeholders in the jury (e.g. investors, technology experts, policy makers, beneficiaries, social economy actors) may be used to validate different aspects of the social enterprise and its digital/social strategy. Technology and social impact articulated in these events does provide an important signal for social investors. **Large EU prize events, national and local prizes and hands-on public demonstrations and workshops are not mutually exclusive**. They present different opportunities for 'exposure' at different levels and stimulate participation from different social economy enterprises at different stages of their development. Each of these events attract specific potential investors that may support the social economy digital transformation with funds or competences.

There are numerous examples of such prize events. For example, the **European Social Innovation Competition[139],** which is ongoing since 2013, and the 7th edition is now underway has promoted several important social areas of intervention and a great number of social economy enterprises benefitted greatly. Paradigmatic is the case of Wheeliz, a platform for sharing cars adapted for drivers with disabilities. Wheeliz was one of the winners of the 2015 edition dedicated to "New Ways to Grow" and two years later, in 2017, raised €1mil in investments from two national investors (one operating in Insurance and another in Transports). In the 2017 edition dedicated to 'Equality Rebooted' many digital social innovations were presented and made it to the final event including Waag (see annex

[137] EquiFund is co-financed by the EU and national funds, as well as funding from the EIF. The European Investment Bank has joined the existing investors through the European Fund for Strategic Investments, while national strategic partners, such as the Onassis Foundation and the National Bank of Greece have also committed to several of the EquiFund supported funds. More information is available at: https://equifund.gr/

[138] https://www.gov.uk/government/publications/seed-enterprise-investment-scheme-income-tax-and-capital-gains-tax-reliefs-hs393-self-assessment-helpsheet/hs393-seed-enterprise-investment-scheme-income-tax-and-capital-gains-tax-reliefs-2017

[139] https://ec.europa.eu/growth/industry/policy/innovation/social/competition_en

II) and Buildx a collaborative platform offering wiki-types solutions and tools for local building and sustainable housing; Feelif, a multimedia application allowing poor-sighted and blind people to recognise shapes on flat screen and Saga, a Dutch peer-to-peer learning network which uses blockchain technologies to record learning attainments and training results upon a digital ledger. Subsequent editions have also featured impact prizes for digital applications such as Mouse4All (a Spanish digital social innovation initiative enabling people with severe physical disabilities to operate Android tablets and Smartphones – impact prize 2018), MTOP goes Digital (an Austrian blended learning programmes using digital technologies and traditional forms of learning to help young and highly qualified refugees entering the local market – impact prize, 2019).

There are also important examples of **national level prizes** and competitions. For instance, the annual Queen's Awards for Innovation is usually open to all UK innovators (including social economy enterprises). One of the winners of the 2018 edition, Metrasens, was awarded the Queen's prize for innovation for its technology employed to reduce risks in many public situations (correction facilities, hospitals, including mental health security, physical data security and counterterrorism)[140]. These types of awards are extremely important since they support and reward research, experimentation and development in key stages of the digital transformation of the social economy.

Local events are used for more hands-on demonstrations to promote examples of social economy enterprise locally, inspire civil action and provide a space for experimenting. **Hackathons and bootcamps** are particularly apt at promoting the digital transformation of the social economy. These events may be organised to provide intensive programming experience usually by ICT professional in software development, designers and managers and involve also youths or unemployed. This will: i) initiate them to coding and other advanced digital skills; ii) expose the local social economy organisation to the opportunity offered by digital technologies and iii) encourage the establishment of connections between professional and ICT experts and the local social economy for networking and future collaborations. One of such cases may be Silex Lab, a social economy enterprise engaged in hackathons, events organisation, training and software development whose activities are supported by partners such as foundations, corporations and local public agencies (e.g. Ile de France and Pole Emploi)[141].

A point raised by many of the cases interviewed – established social economy enterprises and start-ups – was that they would benefit greatly from having access to **best/good practices and successful case studies.** Activities linked to promoting best and good practices may be done not just through prize competitions, but also through the organisation of international conferences/summits, think tanks and other high visibility events or even through old fashioned field work and documentation. For example, government agencies and associations operating within the social economy do provide **handy, step-by-step instructions and manuals** for the formation of social economy enterprises[142]. At the same time, they may provide also advice, case studies and

[140] https://queensawards.blog.gov.uk/2018/08/27/metrasens-this-award-attests-to-the-positive-impact-we-are-making-in-the-world/

[141] There are several interesting cases of R&I for the social economy evidencing the tangible benefits for society. For example, at the 2017 edition of Hack4SmartServices at the Brightlands Campus in Heerlen (Dutch Province of Limburg), ConSense won first prize for their data exchange platform offering solutions for health problems. The platform included also community features for patients and doctors. The platform is based on blockchain technology to guarantee the security and privacy of the users. The four Brightlands campuses are the priorities in the Smart Specialisation Strategy of the region. Research, education and incubation are combined at the campus.

[142] For example, in the UK, the Government site (gov.uk) has a handy manual indicating types of social economy enterprises and step-by-step guidance to start-up (https://www.gov.uk/set-up-a-social-enterprise); likewise, also SocialEnterprise UK provides such guidance with a discussion upon the challenges and tips to serve target communities (https://www.socialenterprise.org.uk/looking-to-start-a-social-enterprise/start-your-social-enterprise/). Similarly, these initiatives are also available in many other countries such as Italy (government agency of the Italian Ministry of Economic Development: https://www.mise.gov.it/index.php/it/impresa/cooperative, and many guides are available from social economy organisations and associations such as: https://www.agci.it/come-diventare-imprenditore-cooperativa;http://www.legacoop.coop/promozione/ or

eventually coaching for the design business plans and application of digital technologies with use cases. These may be used as guidance or demonstrators and hence inspire budding social entrepreneurs to engage public authorities and attract investors.

A further, yet important observation on resource-based constraints concerns **access and availability of 'everyday' ICT applications for the social economy**. It is important to remove barriers concerning access to both hardware and software applications. Resource constraints, in particular of financial resources, limit social enterprises' access to these basic digital commodities. This is an important aspect especially whilst discussing on the use of open technological applications and social digital platforms. The Open Hardware Repository (https://ohwr.org/), for example, constitutes a digital space where scientists share open design for hardware. The space is organised in several projects and the resulting hardware designs are licenced as Open Source. This illustrates how a commons-type organisation of resources including repositories of knowledge, software and designs can be shared widely and empower local sharing platforms through extending reach and scope of the social economy. Such practices can be used to pool resources between communities relying on commons and enacting new market mechanisms. It is also important that such new commons-market mechanisms are supported via public partnership in order to foster new ecosystems (Bauwens, Kostakis and Pazaitis, 2019).

The establishment of an **effective social economy ecosystem** is in fact a critical factor for long-term provision of resources to foster the digital transformation of the social economy. A healthy ecosystem capable of encouraging new social ventures would entail that society should be open to accept new ideas and move forward with integrating new digital technologies in the workflow (processes and activities).

This point is of particular importance in some countries of Southern, Central and Eastern Europe, where the process of digitalisation of the social economy lags behind the more advanced economies. Helping understand that using advanced digital technologies and platform-based relations in the social economy brings substantial comparative advantages would necessarily foster the values of the social economy such as openness and acceptance of new ideas and inclusiveness. These would constitute the drive towards integrating new digital technologies and move community-based relations onto social digital platforms. In these contexts, technology may help to underpin and signal to a wider audience the creation of social value through social ventures: "*use technology to open society*" (cit. interviewee).

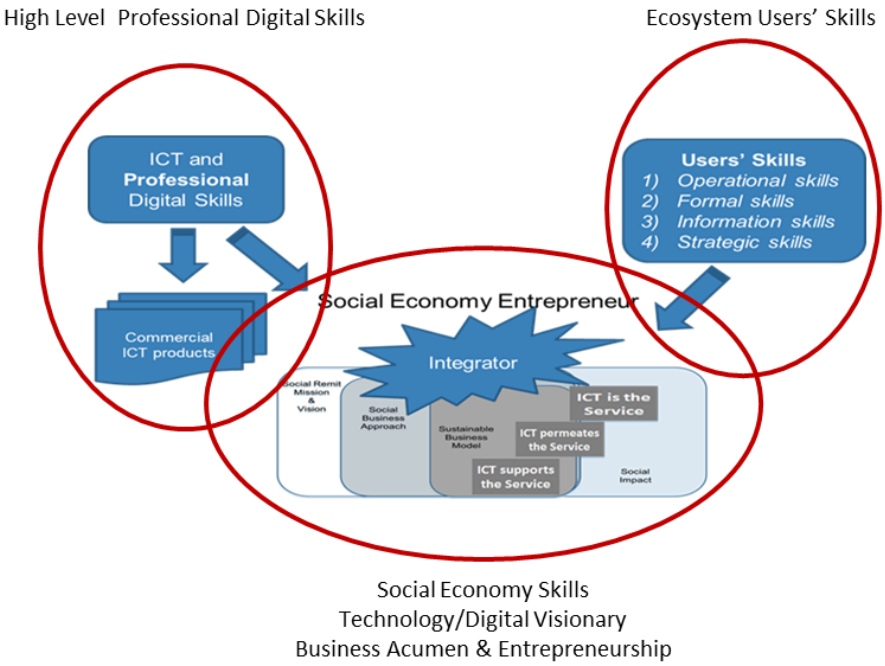
5.3.3 Education and Training: developing digital & social economy entrepreneurship skills

Education and training span several important aspects of the phenomenon as discussed throughout the report. Primarily, the focus centres on the fact that the digitisation of social economy entails the

http://www.confcooperative.net/azienda.aspx?cont=501); Greece (the government agency for the support of the social economy has issued a quick guide for the formation of social coops and employees associations https://kalo.gov.gr/wp-content/uploads/2019/05/2.-ΣΥΝΤΟΜΟΣ-ΟΔΗΓΟΣ-ΓΙΑ-ΤΗ-ΣΥΣΤΑΣΗ-ΚΑΙ-ΛΕΙΤΟΥΡΓΙΑ-ΚΟΙΝΣΕΠ-ΣΥΝ.ΕΡΓ..pdf, while also other social economy organisations have issued their own guides, e.g. https://www.openbook.gr/odigos-dimiourgias-koinonikwn-epixeirisewn/, https://koinsep.org/τι-είναι-οι-κοιν-σ-επ/σύντομος-οδηγός; In the Netherlands there are several guides from the network of social enterprises on topics such as financing, selecting the appropriate legal form etc. https://www.social-enterprise.nl/advies-voor-ondernemers/wegwijzers. Also, the Chamber of Commerce has developed tools for social enterprise start-ups, and the national government has developed for instance a tool on measuring social impact: https://impactpad.nl/wp-content/uploads/Het_Impactpad_NL_2020.pdf Also, at regional level there are programmes, networks, and accelerators for social entrepreneurial ventures, e.g. https://www.platform31.nl/wat-we-doen/kennisdossiers/kennisdossier-sociaal-ondernemerschap.

application of both specific and generic digital skills belonging to different domains, ICTs and social entrepreneurship forming the digital capacity of the social economy[143].

Figure 33: Skills (ICT and digital, social economy and entrepreneurship) necessary for the digitisation of the social economy



Source: own elaboration

In particular, the digital skills to physically design and implement a digital social economy pertain to the domain of professional ICT skills, capabilities and professions; these are similar to those employed, for example, in the ICT and FinTech sectors but are applied to digital designs arising from the social economy. Users' digital skill[144] are those competences allowing users, members, employees, beneficiaries and other stakeholders to interact with different levels of proficiency within the digital social economy. As mentioned in chapter 2, the digital social entrepreneur integrates within the digital social economy organisation his mission and vision, the business approach and model in order to achieve a sustained social or societal impact. The skills associated with this figure pertain to different domains: 1) the social economy; 2) digital technologies and 3) business acumen and entrepreneurship competences (Komarkova, Gagliardi, Conrads & Collado, 2015).

The relevance of each skill may not be singled out. We have to look at the blending of capacities and capabilities of the social economy operators together with skills and attitude of the digital social entrepreneur. In other words, the digital social entrepreneur needs to rely on all sets of skills combined for the setup and running of a successful digital social enterprise. One step towards this objective would be **nurturing a technology-friendly environment where social economy entrepreneurship may thrive**. This will act as an enabler for the whole of the social economy.

apart from the generalised lack of professional digital/technical skills and knowledge by social economy enterprises, accompanied by the lack of social economy-specific digital training programmes, it appears that **social economy entrepreneurs often lack awareness,**

[143] There are different levels of technological capacity that refer to the various levels of digital maturity. These may have an entry point in basic business skills and develop across social and business applications through to more advanced technical skills such as system integration and new digital architecture design.
[144] Basic digital competences, as defined by the 2006 Recommendation of the European Parliament and of the Council (Parliament, 2006) refer to "*the confident and critical use of information society technology for work, leisure, learning and communication*". These competences are underpinned by basic skills in ICT, such as the use of computer to retrieve, access, store, produce, present and exchange information, communicate and participate in collaborative networks.

understanding and access to specific digital skills or application competences (i.e. how to practically integrate digital technologies/tools in their operations or the use of specific applications). These aspects, together with the perceived high investments in digital technologies, often hinder the digitalisation process. However, it is important to highlight that flexible contractual forms such as Software as a Service, Platform as a Service and Infrastructure as a Service may be taken up by social economy organisation. In fact, for many such organisations exploiting or relying on the services offered by technology providers rather than investing resources and finances in buying, setting up/developing and running technology applications may certainly reveal a better entry option.

Software as a Service contract-types may be used both as first steps towards digital transformation and as advanced applications in digital platforms. For example, SaaS allows the deployment of specific applications via web browsers. These include web-mails (i.e. Gmail or Open Source alternatives such as Roundcube, Horde or Zimbra), cloud services (i.e. Dropbox or Open Source alternatives such as Nextcluod, Ceph, AuroraFiles amongst many others) and CRM-type software (Salesforce.com or Open Source CRM such as Odoo and SuiteCRM, Vtiger etc.). Likewise, digital platforms and Application Programming Interface (API, the engine of a digital platform) are also available as a Service (PaaS). PaaS are very popular and tools like Google App Engine or Openshift constitute a one-stop-shop for platform builders providing scalable solutions and easy-to-integrate applications and tools also for beginners.

Moreover, using Infrastructure as a Service, a category of Cloud Computing, social economy organisation may be able to access services of virtual data centres without substantial investments in servers, archives and network technologies. There is a number of IaaS available with different licensing types. For example, Amazon (EC2/Amazon Web Services) and Microsoft (Azure), are two of the most popular vendor-based IaaS whilst OpenStack (Apache License) or Eucalyptus (paid and Open Source) are very popular Open Source IaaS.

Moreover, we shall also highlight that more pressing lack of coding skills may be overcome by the increasing availability of off-the-shelf and ready-use open source software solutions that can be used with just basic ICT skills. To these, there are also many mature software options so called: 'no-coding'. These are software packages, apps and utilities that do not require any knowledge of coding and are ready to be used. These may be implemented in larger technological architecture such as digital platforms adding interesting functionalities through simple 'drag & drop'. This is especially important since **most social economy enterprises do not consider using digital technologies that are in an early stage of development**, as identified during the study. Evidence of this have been found when analysing technological exploration activities. Social economy organisations are focused on solving concrete problems that affect (specific) social groups or societal problems whilst at the same time managing their enterprises towards more long-term goal looking at the economic viability of their business. **Their span of awareness can be narrowly focused, inhibiting them to carry out technological exploration and eventually come up with novel more efficient and effective technology-based solutions.**. Of course, entry-level service contracts, such as SaaS, PaaS and IaaS, or the use of (do-it-yourself) open source technologies and 'no-coding' options discussed above offer valuable opportunities to move the first steps towards digitalisation without breaking the bank.

At the **European level**,it could be first of all be important to make these options more known and give the open source movements more visibility (events, workshops, networks of knowledge to promote open source tech and uptake) within the social economy itself or even structurally support them to reach out towards civil society and social economy organisations. Secondly, the development and implementation of specific competence frameworks targeted at upskilling citizens and organisations such as DigiComp[145] (the digital competence framework) and EntreComp[146] (the entrepreneurship competence framework) have been highlighted as extremely successful in meeting their objectives. The skills/competences frameworks have been developed by the Commission

[145] https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework

[146] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/entrecomp-entrepreneurship-competence-framework

Research Services based on robust research, evidence and expert consensus. The frameworks are raking up success by being implemented in many levels of education and in higher and further education institutions across Europe and beyond. The development of a social economy competence framework, at this stage, would unavoidably include the skill sets necessary for a digital social economy fit for the 21st century whereby economic and social relations are increasingly moved upon digital platforms and advanced technologies such as DLTs and blockchain, AI, IoT and cloud computing are making an impact in the economy and society.

The **regional/national ecosystem** may be of particular help in this particular instance. It is important, for example to see that in the for-profit economy, there is intensive exploration carried out systematically through structured R&D activities. In the social economy, however, there is very limited technological exploration and, when undertaken, it is often carried out through hackathons or living labs rather than in structured 'social' research centres. Exploration carried out through hackathons or living labs is unsystematic and results are often difficult to translate in business opportunities for the social economy.

The reason for this is that the social economy lacks resources, including funding and structures to experiment with, and eventually determine which type of technology may be right for tackling specific problems or implement new/more effective social service design and delivery processes. Hackathons, living labs, hands on creative and training session, and other similar initiatives suffer greatly from scale issues: it is difficult to scale up or out single/specific initiatives; nonetheless the coordinated action of government's agencies may provide real support. We have mentioned the case of Silex Lab in France that, working together with the Ile de France, Pole Emploi and many ICT professionals, is able to scale out activities linked to hackathons and bootcamps by providing both social impact for its target beneficiaries (unemployed youths in Paris) and relevant technology application (Open source software applications). Another notable case, 4PE DIH, involving a local university (The University of Ljubljana), Interreg and the local Digital Innovation Hub managed to grow an impressive network of 91 partners including about 30 FabLab distributed across Slovenia, 1 mobile FabBox and rural-urban linkages. The initiative is based on 4 pillars involving the private sector, education, public administrations and communities and it is sustained through integrating institutional funds from Interreg, European Structural Funds, Horizon2020 and private investments. The initiative is engaged in a range of digitally-enabled Smart Village initiatives bringing digital transformation and living lab to rural areas. Another example at city level is the FabLab of WAAG operating in Amsterdam or the Torino City Lab of Social Impact Torino. These are organised around multi-partnership approaches where business meets, education, research, local government and civil society in a space that combines the necessary equipment with the knowledge of the various members.

The process of exploration is not only expensive, but also very risky and the sector, given the severe constraints, is not proofed for the excessive risk entailed in these activities. To this extent, for example, knowing what is the state-of-the-art may provide valuable insights to social economy enterprises wishing to innovate in this direction. Access to **good practices and use cases of social economy enterprises using digital technologies** may provide a first step in the right direction. We have pointed out that more needs to be done to facilitate access by social economy organisation to **EU-research and innovation programmes** (the Regional Development Funds, Digital Innovation Hubs and the Framework Programme) and **national Small Business Research and Innovation grant schemes.** Whereas at **the local level, hackathons and living labs** may assume the role of a launching pad for further experimentation, adaptation and prototyping which complement those more structured R&D activities.

In order for these activities to be effective, digital literacy, skills and in general a 'pro-digital culture' of the social economy users, beneficiaries and stakeholders (i.e. 'external' culture) needs to be enhanced. In fact, simply linking social economy entrepreneurs and technology experts may not be an optimal solution. Technology experts often lack insights on social ventures and usually do not consider the social need(s) component during the development of digital technologies: technology developers, for example, work according to ontological use cases provided by their clients and social economy processes and values are usually difficult to work in typical business use cases. To this extent, it is in fact opinion of our experts and the participants to the workshop that **the European**

social economy may benefit from management and (e)leadership skills. The rationale is that whilst technical skills are important, the social economy needs managerial and leadership capabilities (soft skills) which would enable entrepreneurs to come up with effective solutions to complex problems making use of the advanced technologies which may support such effort. The ability to manage uncertainty and lead a social mission with business-like mindset is paramount for the long-term prosperity of the social economy. Introducing and integrating digital technology ('tech for good') and technology-related training with social entrepreneurship and social economy-related topics in the curriculum at different levels of education (from secondary schools upwards) may help bridge the gap. Also, social entrepreneurship and management skills blended with digital and technical training at a higher level may help to bridge the gap between high-tech entrepreneurship and social economy entrepreneurship which is currently evident. To this end, several initiatives are being developing especially in the higher and executive education sector. The Prometheus Programme at the Alliance Manchester Business School in the UK is pooling together academics and experts in social innovation, digital technologies and sector specific competences (in environmental issues, health and social care) working on building up competences and capabilities amongst social economy leaders and executives. The themes of the programme focus on leadership and governance including digital leadership, income generation and tendering, and digital disruption covering issues such as efficiency and effectiveness driven digitalisation, business model canvass and strategy. According to our expert panel, workshop participants and case studies, such initiatives and programmes are even more important when considering that the EU is lagging behind China and the US in many high-tech sectors, especially in terms of training for tech-enabled applications in production and services and many talents are currently migrating to these countries. Concerning the social economy, Europe has a far longer tradition in welfare state institutions, policies and organisations on the ground than, for instance, the US where the social economy has a key role through the institution of competence development centres. The GOODDLER Foundation in the US, for example, runs several social innovation initiatives in particular focusing on social and entrepreneurship skills in key topics such as poverty reduction and inclusive growth (https://goodler.org/about). The wealth of practical knowledge of social intervention and the tradition in social innovation within the European Union constitutes a clear advantage which may be capitalised upon through technical, management and leadership skill upgrade by implementing an EU-wide upskilling agenda.

European Universities, and Business Schools in particular, should be involved in the social economy and prioritise teaching and knowledge exchange in social entrepreneurship blended with technical/digital skills training[147]. The initiatives already in place, for example the Universities UK's since 2012 and the Dutch Universities' more recently are delivering on upskilling the next cohort of digital social economy entrepreneurs[148]. These initiatives, coalescing various universities nationwide are focusing on forming graduates with soft management skills to complement social and technical skills. This point is rather important since the digitisation of the social economy cannot be successfully undertaken if the skillsets identified are operating separately and without

[147] In several universities, for example the University of Trento and the University of Bologna, both in Italy, there have historically been departments researching and delivering courses on social economy issues. These are increasingly incorporating digital and advanced technologies in their social innovation-oriented activities. There is an increasing number of master courses in European Universities (both Masters of Art and Masters of Science programmes) dedicated to the social economy and the solidarity economy. In many of these programmes there are also advanced courses in IT and digital social innovation. For example, the Innovation Management and Entrepreneurship (IME) MSc and the MBA programmes at the Alliance Manchester Business School include modules on high tech innovation, social entrepreneurship, sustainable development and applied projects such as 'Not-for-Profit Consultancy' amongst their courses. Here, social economy entrepreneurs and innovators share their insights and contribute to the formation of the graduates.

[148] In 2012 Universities UK, the association of UK Universities began to deliver on its strategy "University Enabling Social Enterprise – Delivering benefits for all" in order to enhance graduate employability, enterprise growth and community benefits. Recently a group of 14 Universities in the Netherland coalesced around a similar strategy positioning digitalisation and new technologies research for the social economy up in their agenda.

understanding of each other. These initiatives may be easily deployed in other national settings with ease and the impact may be larger than those initiatives which currently are undertaken at the regional level[149] or by a single university[150].

For the modernisation process it is important to have a wide group of people with adequate technical skills, capable of supporting others, less skilful, in coming up with concrete solutions to problems that require technical knowledge. These peer support activities may be institutionalised through the implementation of training and nurturing spaces such as **regional or local technology incubators** tailored to the social economy and promoting digital social innovation.

The establishment of technology-oriented incubators is usually **spearheaded by entrepreneurial universities** and would necessarily include also training intermediaries, establish co-working spaces, and digital/social entrepreneurship coaches/mentors who can enable the exchange and diffusion of digital knowledge to the social economy[151]. Nonetheless, there is ample space for other institutional actors to link with and extend existing digitalisation programmes to the social economy. For example, at the regional and local level, local governments, businesses and the social economy may join the Digital Skill and Job Coalition whose actions are directed at boosting digital skills and may range from training to the unemployed and coding classes for children and their teachers in schools to providing professional ICT specialist training[152]. Moreover, the circa 300 Digital Innovation Hubs (DIH) operating across European Regions[153], may extend its ecosystem approach to developing digital platform-based technologies (including AI, Big Data Analytics, Robotics etc) to the social economy, providing a strong support system involving traditional businesses and start-ups, researchers, coaches and investors. The activities carried out in the DIH are already geared towards innovation activities, business development and skill creation, therefore, opening to the social economy would necessarily yield tangible local benefits and opening up opportunities.

5.3.4 Collaborations

Collaborations have been hailed as the way forward for individuals and organisations to embark in common tasks that each party, alone, would not be able to complete successfully. Collaborations are very important for the social economy especially for digital social innovation[154]. The enabling nature of collaborations may play out either through **intra-social economy collaborations** and through

[149] For example, in Emilia Romagna, Italy, the University of Bologna, which has been traditionally involved with the social economy, is working with other universities within the region, public research centres and local and regional authorities to study, provide research and consultancy support for social economy issues.
[150] It is also interesting to notice that some universities such as The Hellenic Open University, Greece are delivering postgraduate (Master) programmes in social and solidarity economy online, therefore using digital platforms, digital media technologies, authentications and databases services for such delivery.

[151] The Manchester Science Park caters to more than 300 science and technology start-ups including several Community of Interest Companies (CIC) in their incubators/accelerators. One, *Blockchainers CIC* founded by a former MSc Entrepreneurship graduate is focusing on blockchain development and training; another, *Keep on Keep up*, founded by two academics of the University of Manchester and the Metropolitan University are focusing of gamification and new technology applications for active and healthy ageing and fall prevention. *Keep op Keep up* was the recipient of the Outstanding Contribution to Social Innovation, 2019.

[152] For more information: (https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition). These activities may, for example be taken up through the Digital Opportunity Traineeships currently employed by many large companies (https://ec.europa.eu/digital-single-market/en/digital-opportunity-traineeships-boosting-digital-skills-job).

[153] The Digital Innovation Hubs initiative is one of the five pillars of the Digitising European Industry https://ec.europa.eu/digital-single-market/en/policies/digitising-european-industry.

[154] This datum emerged also from a recent survey commissioned by the Social Good Accelerator (2019). The survey, conducted on over 200 social economy organisations, revealed that 86% of the respondents were wishing to start or continue on their collaborations for technological innovation.

collaborations with other stakeholders including with their 'main associates' (governments, users and beneficiaries) as well as the private for-profit sector, universities and intermediaries.

'Open' collaboration within the social economy happens between organisations that share the same values even if they are not necessarily collocated. This mutual exchange is fundamental for successfully addressing social needs in a wider context. The definition of 'open' needs some clarifications. It has been ascertained that social economy organisations do not have to - or perhaps they do not need to - be an area of 'open and free' for all. Notably, it has been acknowledged that social economy may not be interested in collaborating with organisations that do not share the same values (see the extended discussion in chapter 4). Though, open collaborations with trusted organisations require considerable time and effort to be implemented and, once established, they may require time and resources - especially in those cases where more people are working on solving the same social issue. Of course, these may be fostered at a local level since proximity favour these types of collaborations. The **promotion and creation of social economy clusters – perhaps in the form of commons -** consisting of organisations, enterprises and actors sharing similar digitisation agendas and programmes, may certainly facilitate the exchange of know-how, calibration of technologies to users' and beneficiaries' needs, and co-develop/co-implement business models as to achieve economies of scale. Peer-to-peer: the Commons Manifesto (Bauwens, Kostakis and Pazaitis (2019) argues precisely in this direction. It is also important to highlight that small-scale public investments may reveal beneficial in developing communities of practice within the social economy.

Larger scale-initiatives may create opportunities and incentives to engage in multi-stakeholders collaborations. For example, the European Commission is promoting, under the Smart Specialisation Platform, a Social Economy action. In fact, the Smart Specialisation Platform for the Social Economy[155] (aims to stimulate cross-border partnerships so that the social economy may make good use of the single market. One of the priority of such action is the promotion of social economy clusters to face the fragmentation of the social economy by creating a European value chain. In 2018, EASME launched the call "European Social Economy Regions Pilot (ESER)" to raise awareness and build networks of social economy stakeholders at regional and local level. Following on the success of the first round, a further call was issues in 2019 with the aim of supporting a small number of networks of inter-regional collaborations to develop collaborative projects. Such initiatives, pending rigorous evaluation, may be scaled up and, for example, include the agenda of digitalisation of the social economy[156].

Moreover, it is suggested that belonging to multiple associations of actors and networks – either **supranational, national and regional** – may constitute an important enabler of diffusion of best practices, co-creation of socially transferable solutions and a source of social innovation. The work carried out by organisations such as NESTA in promoting social innovation, Ashoka in promoting changemaking social entrepreneurship and digital social innovation projects such as Digital Social Innovation, the digital Social Innovation Lab, SI-Drive and ICT-Enabled Social Innovation, all contribute to disseminate good practices and knowledge of digital social innovation and social entrepreneurship. The idea is to foster a modern, sustainable and impact-oriented social economy[157]. These initiatives highlight that such arrangements are leading to the formation of associations of different networks of social actors. Even when networks may have different mandates, connecting with each other facilitates the exchange of knowledge of new ways to tackle similar technological or social issues, leading effectively to greater peer to peer learning effects. In our good practices cases, the example of social platform cooperatives show enormous potential for digital social innovation with several social business models developed for the development and diffusion of social technologies, based on Open Source and spanning from digital platforms to more advanced technologies. A further

[155] https://s3platform.jrc.ec.europa.eu/social-economy

[156] More information is available at: https://www.clustercollaboration.eu/news/social-economy-missions-call-proposals-has-been-launched

[157] See: NESTA: www.nesta.org.uk; Ashoka: www.ashoka.org; Digital Social Innovation: https://digitalsocial.eu; digital Social Innovation Lab: https://dsilab.de; SI-Drive: http://www.si-drive.eu/; and IESI: https://ec.europa.eu/jrc/en/iesi.

positive aspect of sectoral collaborations may be that of providing social enterprises a benchmark to assess their impact.

Another enabler may be found in collaboration and cooperation with the private sector[158], especially with companies which are more technology and market oriented. The Social Business Initiative (SBI) follow up report (2018) does not find substantial evidence of the importance of new technologies in facilitating cooperation between the social economy and the traditional business economy. Nonetheless, the best practices therein identified (Simplon in France, Mfore in Finland and Elderbrook in Germany) show that there is enormous potential for the social economy for learning from the traditional business economy. Such potential may be realised through introducing and carrying forward, collaboratively, long-term digitalisation projects. In particular, initiatives in the area of social training (for NEET, refugees and unemployed), in healthcare innovation for patients' engagement or elderly care show how collaborative effort may be deployed in order to kickstart technology-focused projects with longer term objectives (Heimer et al., 2019, p.195).

Through such collaborations it is possible to leverage '**in-kind services'** and transfers of knowledge and resources to augment the operative and absorptive capacity of social economy. This goes together with the 'alignment' of the development of technological solutions to the social economy's needs, those of its users, beneficiaries and stakeholders. In the context of the digital transformation, collaborations with IT companies – especially large and established ones – can facilitate the transfer and adaptation of off-the-shelf digital solutions[159]. The reader may be remanded to the case study of SocialTechno, available in Annex II, whose object consists in the customisation of digital solutions and the transfer of necessary knowledge to implement them in the social economy. Further discussion on this topic is presented in Chapter 3.

Within the ecosystems it is argued that collaborations **between universities and social economy ventures on regional and national level** are also necessary in order to carry out explorative activities with new technologies. This is of paramount importance since experimental settings are critical for trying and testing novel solutions that could eventually be scaled up/out in a market (social market) environment. Successful collaborations with other social enterprises, private for-profit companies and universities may provide ample opportunities for learning as well as signal their activities to willing investors.

Another critical aspect concerning collaborations involves **intermediaries**. Intermediaries have a critical role to play within the ecosystem across different sectors, but also between different levels (supranational, national, regional/local). Intermediaries are active in connecting various stakeholders within the system and therefore promote harmonisation by aligning those initiatives that are being developed at the European, national and local level. Many such intermediaries from the social economy are already operating at different levels and with different aims. Organisations such as Ashoka, Impact Hub, NESTA, WAAG, SocialTechno are all involved in major intermediary roles for the social economy, and their missions is very much linked with the digital transformation of the social economy and its entrepreneurial capacity.

With the regional frames of the social economy in mind, intermediaries may be able to convey to regional authorities' information and evidence of misalignment or discrepancies in social actions. These activities may spur new homogenous policy actions and **local/national/EU** social policies may be steered towards pressing issues highlighting latent social needs and timely countermeasures which may be undertaken before fully fledged social issues become too disruptive. Important to the digital transformation of the social economy, intermediaries may be active in connecting social economy initiatives with technology providers, universities and other digital social economy enterprises.

[158] A recent report commissioned by EASME (Heimer et al., 2019), highlights the criticalities of such collaborations for the enhancement of the role of the social economy within the social and economic digital transformation of Europe.

[159] The survey commissioned by the Social Good Accelerator (2019) shows that the respondents were particularly inclined to engage in commercial collaboration for the development of digital social innovation, In fact, almost 70% of them engage in these collaborative ventures through contracting and sub-contracting forms rather than through philanthropy.

Throughout the study, it was brought to our attention that critical to a successful digitisation strategy would be the **direct involvement of consumers, users or groups of beneficiaries**. In fact, the cultivation of collaborations between **social economy enterprises and consumers' associations, civil society organisations and directly with members and users** may inform social economy organisations about digital habits and skills of the counterpart. These could be taken up in their digital strategy or even developed to transform consumers into prosumers or engage users more effectively. The example of energy cooperatives, such as Energia Positiva in Italy or Electra in Greece (See case study in annex II) shows that digital platforms and integrated advanced technologies such as blockchain may originate from a shared and open design process and reflect user-centric principles. The platforms, in fact, are fully functional and do not require advanced skills from their users. In other words, direct involvements of users early on in the process helps generate invaluable insights onto design and implementation of community digital applications.

The social economy is not going through the digital transformation in isolation from the other segments of the economy and society. **Connecting social economy enterprises with local authorities** is a critical enabler as both parties may identify their role in the local social economy, their contribution in tackling social and societal problems and, generally the way they operate. In other words, social economy – local government collaborations may further a virtuous cycle of collaboration by leveraging competences, avoid possible duplication of work, and foster modern, digitally enabled innovation procurement processes. Instances of such events are commonplace for initiatives involved in the sharing economy, health and social care, social housing and other social services.

5.3.5 Law and regulation

Social economy actors still suffer from significant competitive disadvantages compared to traditional businesses. This is due to a lack of political, regulatory and financial initiatives aiming at boosting the development of the social economy and its digital transformation. These, in turn, hamper the potentials for social inclusion and societal actions.

On the legal side, it has been argued that many **social economy organisations lack appropriate knowledge of the national and European legislative frameworks addressing the social economy**. Legally, actors and organisations of the social economy are classified differently across different countries. Meaning that in each of the four countries considered in our study, there are several legal definitions applicable and each may require different types of support and legislation. For example, some countries make the distinction between social cooperatives, cooperatives and social enterprises and other legal forms of association. **These distinctions need to be clarified, especially at the European level with particular care especially for important implications that may derive.** It is important to underscore that reducing standardised classes and categories may not be relevant for the social economy: somehow it may even be detrimental, i.e. not all cooperatives are social economy enterprises and social economy enterprises may wish to continue selecting and adopting the legal form that better meets their operational needs. As we have seen from our case studies, in Greece, some social economy initiatives do not have a standard legal form, and this allow them to carry out direct social action through technological experimentation and development rather effectively. **Harmonisation of definitions, at the European level necessarily would involve Member States cooperation and this is especially important so that each group of social economy actors may receive appropriate levels of support and work within an adequate regulatory framework across borders.** This is especially critical in a longer-term view of a more networked and interconnected European digital social economy.

On the regulatory side, it has been argued that **the social economy is mostly self-regulating concerning the adoption and deployment of advanced technologies**. Yet, an overarching question concerns the collection and use of data. The European strategy for data, putting individuals' interests first, should be wary of how data and individuals' information are collected and used. Therefore, there should be clear and shared rules on access and re-use of data and information based on common standards, tools and infrastructure to handle the data deluge. Important issues such as General Data Protection Regulation (GDPR) should be taken into consideration whilst fostering the

digital transformation of the social economy. **Social economy organisations are using digital platforms and advanced technologies in accordance with social economy's principles and values such as inclusiveness, democratic governance (including data sovereignty) and, generally, not to extract profits**. These aspects are clearly in line with some of the principles underlying the GDPR and place the social economy in a privileged position compared to the business economy in terms of compliance. Yet, these aspects are in clear contrast with the modes and strategies of technology adoption and deployment in the business economy, where these technologies are originally developed. This causes a gap between the objectives of new technologies and the use that can be made of them in the social economy. In other words, advanced technologies developed for the business economy may not be directly transferable to social economy applications. For this reason, R&D activities are of paramount importance as argued above; nonetheless, to facilitate the translation of digital platforms and advanced technologies between the business economy and the social economy, interoperability, standards - open standards - and forward-looking safeguards are critical. Exploration of new frames of regulation may be the only way forward. In fact, social innovation, especially in the digital social economy, opens new unexpected spaces requiring new forms of regulation for social interactions and the disintermediated relationships build upon digital social platforms and advanced technologies (from AI to DLTs). The impact of these new emerging relations, whilst focusing on operations amongst social communities, may not necessarily be confined within national borders.

Taking this into account, **regulatory sandboxes** both at the EU and at national levels may provide desirable regulatory solutions. Sandboxes are regulatory tools, initiated in the UK in the context of financial regulations, whereby regulators interact with financial technology companies in order to test out regulatory and societal consequences of innovative business models. The final aim is to co-draft regulations and reach a compromise which balances enterprises needs and societal outcomes. Likewise, applying this regulatory tool to the social economy may be most promising. Here, regulatory bodies, social economy organisations and technology developers may learn and improve on the ways and modes technology may developed and deployed for the common good.

5.4 Policy synthesis and recommendations

In this final section, we summarise the policy approach. Our objective is that of presenting a set of policy recommendations 'distilled' from the evidence collected, collated and analysed throughout the study. These are organised according to the appropriate level of intervention: the European, national and local levels with reference to the macro-areas identified. Whilst transversal references to specific digital technologies will be made when suitable considering also the strong complementarities between technological domains, here we present a concise technology-specific summary.

With respect to digital social economy platforms, the key areas identified and discussed in chapter 3 that should be addressed via policy interference – at EU, national, regional levels – involve 1) the legal regulation of digital platforms;2) the strengthening of existing and the creation of novel funding; 3) the design of solutions able to addressing local social and societal problems; 4) involvement of the private sector; 5) the improvement of the general populations' digital skills; 6) promote testing and experimenting with ethical and sustainable practices; and 7) capitalise on good practices.

Considering the first point above, **the legal regulation of digital platforms** should be consistently defined across countries, focus on the type of outputs offered by digital platforms and take into consideration the existing and prospective differences between for-profit (commercial) versus social, cooperative, community-centred platforms. The strengthening of existing financial forms and the **creation of new funding instruments** shall include crowdfunding, social innovation procurement, and forms of social impact financing in order to support the social economy in its digital transformation effort. The development and implementation of digital platforms constitutes an important stepping stone in this process.

Support towards the development of regional, national, European and even global networks between social economy organisations which may be facilitated by the adoption of digital platforms is needed

especially in consideration of new/emerging **design solutions to address locally social and societal problems.**

Collaboration and cooperation with the **private sector**, especially with **technology and market-oriented companies**, should be further supported, e.g. via innovation public procurement tailored towards this end.

An important step towards the generalized diffusion of social digital platforms must foster **improvements of general population's digital skills.** Digital skills, as discussed in Chapter 2 and in the previous section, will help the social economy, its stakeholders and users to make better use of digital platforms by the service providers, people in need especially, the elderly, frail, people with disabilities, and achieve social impact in a wider context.

Moreover, digital social economy platforms may be used as **testbeds for the introduction and dissemination of new ethical and sustainable practices.** These may have greater impact concerning production methods in traditional sectors and in services & utilities such as finance and energy.

Finally, concerning digital platform technologies, the identification, analysis and **extraction of transferable elements** from good practices and successful cases from the social economy may foster and overall upgrade of operations by favoring the integration of advanced technologies such as blockchain, AI, IoT. This approach should be supported and promoted on all levels.

Advanced technologies considered in this study such as Open source technologies, Internet of Things (IoT), Distributed Leger Technology (including Blockchain), Big Data, Cloud Computing and Artificial Intelligence, rather than being used in isolation, they often overlap, complement and enable each other. This is especially true when they are used upon digital on platforms.

The expectations for **Open Source technology** as future enabler in the social economy are very high. The philosophy of open source, open source communities and digital commons fits very well with the values and principles of the social economy. In several case studies, promoting open source is firmly rooted in their mission (e.g. Libre Space Foundation, P2P Lab and Open Source School). There are also other public funded initiatives which involve students, education and public research institutes in the development of Open technologies.

Open Access and interoperability are important conditions for developing new uses of technology by social economy actors, but governments hardly promote the development of Open Source software or hardware. The fact that investments in research and development of Open Source software and hardware have a high public or social return and a low private return, provides a strong rationale for public subsidy for open source technology[160]. Common use can also be facilitated (with public support) in physical spaces and infrastructures. Makerspaces, FabLabs, hackathon-spaces and Do-It-Yourself-spaces. Still, efforts for mainstreaming will come up against a paradox, as open source tends to be mainly designed decentralized by relatively small communities, which makes it more difficult to create commonly accepted operable open source tools and protocols.

Recently a whole landscape of **Distributed Ledger Technologies** has emerged with a broad range of applications in the social economy. Stakeholders in these landscapes organise events (or platforms, such as the Dutch Blockchain coalition) to raise awareness, identify stakeholders, map the ecosystem, discuss opportunities and challenges, demonstrate use-cases, suggest policy initiatives and update regulations. Moreover specific niche support for R&D related to blokchain development in specific social impact related applications such as traceability, democratic control mechanisms and trustful transactions.

[160] Trajtenberg, M. (2011). Can the Nelson-Arrow paradigm still be the beacon of innovation policy?. In: The rate and direction of inventive activity revisited (pp. 679-684). University of Chicago Press.

It would be appropriate to initiate these activities at an early stage of the technology emergence and with a range of different stakeholders in society from a wider societal perspective. An example is the public hearing 'Blockchain: technology for the social economy 4.0' organised by the European Economic and Social Committee (EESC) on 29 May 2019[161] where opportunities and challenges for the social economy have been discussed from different angles: research, social economy start-ups, trade union, lab's, the European Commission and the European BlockTech Federation. Also Euroepan call like 'Blockchains for Social Good' help to make the 'social added value' of such technolgoies visibile and promote more action and research in a European context. Similar initiatives should be taken for other technologies and digital innovations and highlight the social added value more systematically. At national level it is also recommended to set up networks, platforms such as the Dutch Blockchain Coalition (https://dutchblockchaincoalition.org/en/about-dbc).

Overuse or misuse of **Artificial Intelligence** has negative consequences, especially in terms of reducing human control. The social economy typically cares, or at least is more sensitive about such risks, more so in cases where there is no regulation because it could be counterproductive in generating the social impact. On the other hand, fear, ignorance, misplaced concerns or excessive reaction may lead a society to underuse AI technologies, which translates into societal opportunity costs. One of the recommendations of Floridi et al. (2018) is to develop an EU oversight agency responsible for the protection of public welfare through the scientific evaluation and supervision of AI products, software, systems or services similar to the European Medicines Agency. Relatedly, a 'post-release' monitoring system for AI could be developed. It is advised to closely monitor developments of AI applications through a regulatory authority at EU and national level for AI algorithms, not only for technical deployment but specifically from an ethical, safety and societal perspective (EESC and Muller, 2017).

Finally, initiatives promoting good use of AI includes '**AI for Good**'. It is a global initiative involving the European AI ecosystem in contributing to positive impact projects through AI. The aim is to put **AI at the service of social innovation** to support the digital transformation of the humanitarian field and find concrete solutions to the pressing modern humanitarian issues. Topics comprise the fields of environment, health and education and activities include events where teams can pitch AI solutions. The AI for Good lab consists of spaces where people meet to develop prototype solutions. It is recommended to set up similar initiatives at national level.

Internet of Things and promising applications in assistive technology for target groups, mainly people with disabilities, such as… (please complete, see comments brochure) .

In the remainder of the chapter, our recommendations are provided keeping in mind the complex nature of operations in the social economy. In particular, we refer to the characteristics identified in our analytical framework and linked to the nature of social initiatives (to achieve social and societal impact) and the necessity for longer-term prosperity (consolidation of the digital social economy and growth). Of course, specific transversal technological implications are singled out when necessary.

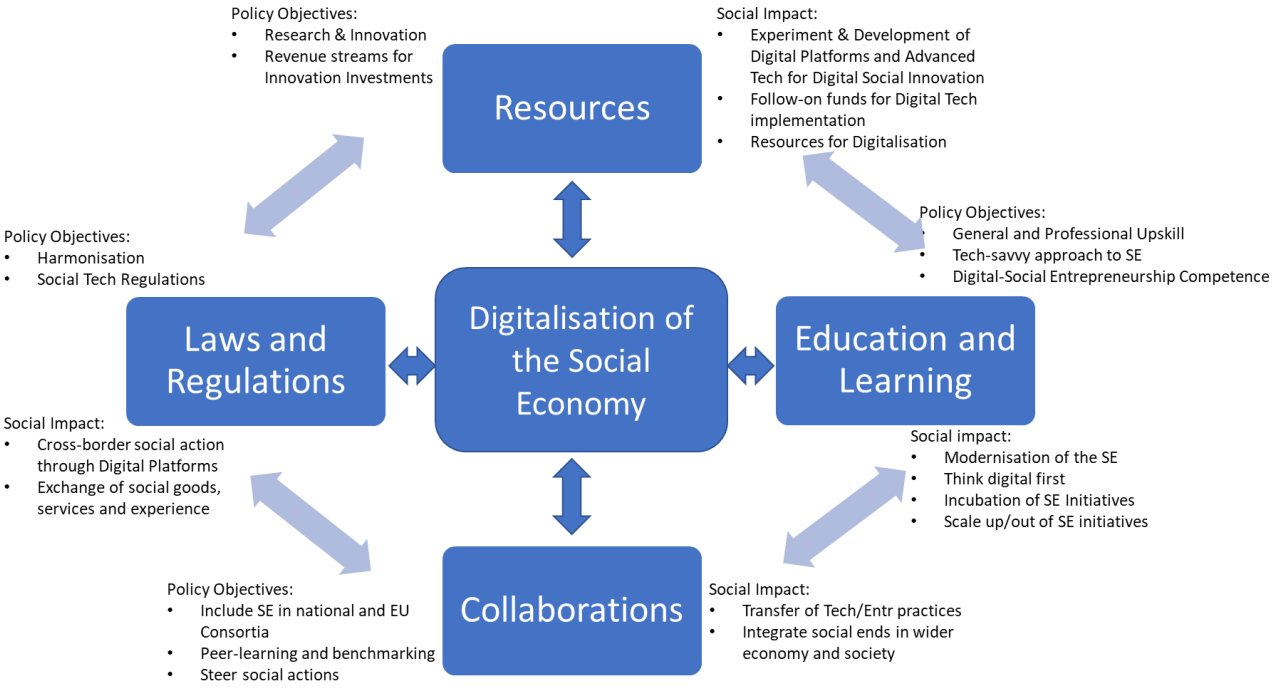
5.4.1 Synthesis and recommendations: final considerations

In the following figure, we highlight the main high-level policy areas that may have beneficial impact on the digitalisation of the social economy.

[161] https://www.eesc.europa.eu/en/agenda/our-events/events/blockchain-technology-social-economy-40where and https://www.eesc.europa.eu/en/agenda/our-events/events/blockchain-technology-social-economy-40

https://www.eesc.europa.eu/en/news-media/news/blockchain-eesc-calls-strategy-make-eu-world-leader

Figure 34: High-level policy areas for the digitalisation of the social economy



Source: own elaboration

Access to Resources

The digitalisation of the social economy requires access to resources. A first critical resource for the digital transformation concerns investments for **Research and Innovation (R&I)**. Through R&I activities, organisations may carry out exploration of new technological combinations and exploitation of such combinations within the social economy. These activities are not currently being deployed to their full potential. In the social economy, R&I activities are not structured and systematic. Hackathons and open labs/demonstrations, although useful at a local level are not sufficient to promote a social economy-wide digital transformation.

A second important source concerns income from the social and societal activities carried out towards achieving a social and societal impact. Revenue streams are employed to assure economic sustainability and eventually innovation and growth; digitisation is increasingly seen as strategy for growth of social impact as well as for extending social activities. Potential revenue streams have been discussed in the previous sections and throughout the report, nonetheless, we have to convey that the public administration, government and public authorities are potentially the biggest source of demand in Europe and in its Member States; innovation procurement has been identified as an appropriate source to favour the digital transformation of the social economy.

The European Union is investing greatly in R&I, for example, through its Framework Programmes, Structural and Social Funds. The Horizon Europe programme, which will begin in 2021, earmarked some €100Bn for research and innovation.

The EU should boost active measures of inclusion of social economy organisations in R&I, especially in those technological areas (digital platforms and advanced technologies) that may contribute to the modernisation of the social economy. Several initiatives at the European level, for example, involve actions which have direct relevance for the social economy.

In the absence of specific national R&I, for many social economy organisations these are the only sources of research and innovation funds. Many important research and innovation projects

undertaken, for example under the H2020 banner especially under funding streams such Science With And For Society (SWAFS), have specific R&I and technological objectives including platform technologies, DLTs and blockchain, AI, Big data and analytics, cloud computing and Internet of Things. These are important streams of research and innovation activities that have the potential to high;ight specific technologies that may benefit greatly the social economy. this is even more pressing considering those advanced technology areas, such as IoT, Cloud Computing, and Big Data that are finding more applications in the economy and the social impact of their application in society has been sufficiently explored. In the case of Blockchain and Distributed Ledger Technologies, for example, the activities carried out by DG CNECT, DG RTD and DG GROW[162] in the last decade, span from proof of concept stage to piloting and scaling up.

At the same time, the excellent research outcomes of the programmes are rarely translated into tangible benefits for the social economy. In particular, there seems to be a lack of opportunities and support to translate proof of concepts into distributed digital social innovations. In other words, the programmes, whilst provide valuable resources to initiate the research and innovation process, stop short at applications and wider diffusion.

In fact, ***R&I programmes should provide follow-on funds for piloting/prototyping, testing and deployment of technologies for social good or mainstream R&I funds should stimulate social spin-offs or at least the introduction of social considerations in technology development*** which are essential in order to set out appropriate exploitation strategies. This is a critical aspect, especially with new and emerging technologies such as cloud computing, AI, distributed ledger technologies. These technologies, whilst already interesting inroads in the business economy, are only being developed and piloted in the social economy. Implementing follow-on activities with earmarked resourced may provide the necessary financial support underpinning a successful exploitation strategy and creating the pre-conditions for valuable social and societal impact.

National efforts on the digital transformation of the social economy are not exempt from structured and systematic R&I investments. In many European countries, specific SBRI-types programmes have revealed to be very efficient public investments for the development of specific applied technologies and particularly effective to bring new innovations to market[163].

Digital social economy organisations should be involved in such programmes and, if necessary, SBRI-type initiatives should target digital social innovation.

Moreover, national digitalisation campaigns are thought out and designed targeting the digitalisation of traditional businesses, and do not provide specific support for social economy organisations. For example, the Italian Innovation Fund, which is strongly oriented towards Industry 4.0, does not exclude social enterprises (social enterprises, for example, are eligible at the same conditions of SMEs) but the main actions are oriented towards the business economy. Nonetheless, the Italian Innovation Fund's forward-looking approach is moving towards integrating the social economy within its purview, but specific actions concerning the social economy - including cooperatives, digitalisation of the social economy and circular economy - are at the 'feasibility' stage.

Hackathons and bootcamps, hands-on demonstrations and open lab spaces are currently the main source of R&I activities in the social economy and are usually undertaken at a **local level**. The

[162] https://ec.europa.eu/digital-single-market/en/news/eu-funded-projects-blockchain-technology#Projects%20list

[163] SBRI are public Small Business Research and Innovation investments assigned competitively to strategic technology and innovation projects carried out by small business. These types of programmes are particularly successful in promoting small businesses research and innovation. Social economy organisations are, in principle, not excluded from applying and in many cases, they do obtain R&I grants and even continuation grants and support. Nonetheless, these schemes are particularly well suited for social economy innovators since in many case (such is the case of the Dutch Small Business Innovation Research led by the Netherlands Enterprise Agency) the supported topics include social and societal challenges, environment, energy & sustainability and social security.

monetary investments to develop hackathons and bootcamps initiatives are usually rather contained. Nonetheless, these are extremely effective to spur local engagement and particularly efficient in recombining, trying and testing, on the field, advanced digital technologies.

Therefore, ***Hackathons, Bootcamps, FabLabs and other hands-on tinkering, experimenting and demonstrations activities should be encouraged***. In particular, these initiatives may be scaled up/out through local partnerships with local governments and agencies. This way, what are thought as one off-activities such as hackathons and bootcamps, may become permanent laboratories integrated into more structured social economy initiatives. We have seen, for example, how these partnerships may achieve important social impact as in the case of the Silax Lab, the FabLab Network in Slovenia, the Waag's FabLab in Amsterdam and the Torino City Lab (mentioned in section 3 above)Nea Guinea, App for Good and Commons Lab (Annex II) whereby these eventsstructured activities are undertaken with other institutional partners such as local governments, agencies, businesses and schools.

A long-standing European programme such as Interreg Europe[164] is particularly well placed to support local governments and actors through digitalisation actions across different areas. For example, it has been particularly successful in areas such as village and rural communities, smart cities and digital regions[165]. On the other hand, the Digital Innovation Hubs, operating at the local level may be involved more actively in supporting the agenda of the digital transformation of the social economy.

Regional and local authorities should engage in national and European programmes promoting digital social innovation initiatives at the local level. Local initiatives such as Innoviris[166] may act as intermediary or catalyst for the creation of local R&I partnership or for outreach of already operating local R&I and social innovation initiatives.

Research and innovation activities performed by international consortia either supported by national digitalisation programmes or carried out on the field through hackathons, FabLabs and demonstrations are but the first step to generate knowledge and understanding of digital platforms and other advanced technologies by the social economy. A more tangible approach to translate these technologies into valuable applications to be picked up, adapted and used within social economy organisations requires further resources and investments. As mentioned, at the EU level, especially through the Framework Programmes, follow-on funds may reveal key to initiate the process of translation of research and innovation outcomes into piloting and deployment activities. National experiences, such as SBIR-types programmes demonstrate that follow-on activities ('second' and sometimes 'third round' grants) provide successful avenues for innovation, including digital social innovation. Nonetheless, bringing these technologies to full operation within a social economy organisation may require further investments by the social economy organisations willing to scale up/out and adopt digital solutions.

This aspect brings us to the second critical issue: **sources of revenue**. Social economy organisations' employ their revenues to ensure economic sustainability and eventually innovation and growth. They increasingly see digitalisation as an optimal strategy for achieving both social impact and growth; also, an increasing number of digital social economy start-ups are using technologies from the onset to integrate their operations and provide interesting digital social value propositions. Nonetheless, we shall not forget that in many areas of the social economy, especially in social services and in deprived areas, revenue streams may not compensate for the actual or prospective social impact. In these contexts, the public administration, government and public authorities remain the biggest source of social innovation demand. **Innovation procurement** that simultaneously promotes social and digital prospects is an appropriate means to favour the digital transformation of the social economy. Procurement is a critical source of funds and engagement for the social economy. Its innovation policy

[164] https://www.interregeurope.eu/

[165] Also the Digital Innovation Hubs (https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs) whilst covering many interesting technological domains including digital platforms, big data, artificial intelligence and robotics, focus exclusively on traditional businesses issues (research, investments, incubators etc) for start-ups, SMEs, large companies and business associations.

[166] https://innoviris.brussels/

impact extends across the three levels identified above (European, national and local). Social and societal impact considerations in current innovation procurement practices across Europe, Member States and local authorities are currently very fragmented. There are few examples of good practices and these are rather insufficient to accrue an impact above their circumscribed context.

Innovation procurement should include clear objectives targeting the digital transformation of the social economy and refer to specific advanced digital technologies, their combination and applications. For example, especially for procurements involving social services, the terms of the contracts should include platform-type relationships (perhaps through a two-sided platform), a secure digital data management plan (DLTs) and shared (secure) archives on the cloud.

Moreover, ***preference in commissioning should be given to open technological applications and released under open source licensing.*** This practice would favour dissemination of technologies designed to serving the needs of the public contractor issuing the tender and may be made available for adaptation and redeployment for other social purposes.

Governments' and public agencies' innovation procurement commissioning should include objective considerations of social and societal impact. Such provision contributes to level the playfield for social economy organisations that are at a disadvantage in competing with traditional for-profit businesses for public contracts. For example, proposal evaluation should assign a certain weight to considerations of social and societal impact. This should be considered together with other evaluation criteria such as convenience, price and value for money which are currently the only criteria deciding on commissioning[167].

The EU, national and local governments should experiment with alternative ways to enhance access to resources for the social economy. New schemes such as social impact bond and smart contracting are becoming increasingly popular and they may be used to direct the effort of the social economy towards pressing social and societal issues and, like innovation procurement, to foster the modernisation of the social economy. Such initiatives are usually managed through digital technologies and would certainly require digital engagement by social economy organisations. Examples are digital tendering procedures, online impact monitoring dashboards and DLT-based multi-parties smart contracting.

Skills, Education and Training

Skills, education and training present rather complex issues. These are discussed throughout the study (cf. Section 1.4; Section 2.2; Section 3.2 and Section 5.3). Such issues span several domains including ICT infrastructure, professional ICT competences, social economy's labour relationships, users' skills and digital social economy entrepreneurship. Skills, education and training in these areas may be provided through formal education, coaching and on-the-job training and involve hard skills such as digital architecture design, programming and coding, and digital technologies proficiency as well as soft skills such as future skills, management and strategy. These skills and capabilities should operate upon an adequate ICT infrastructure. These include ideally 'high-speed connections' and widely available connectivity. Moreover, stakeholders and users should be at least digital literate, implying a widespread proficiency of basic digital competences (See figure 9, (Parliament, 2006))[168]. Focusing on the entrepreneurial aspects driving the digital social economy agenda, social entrepreneurs should be able to combine the skills and competences from the social economy with

[167] As discussed, many of such provisions are already considered in procurement regulations; however, they are not implemented or taken up by local procurement agencies (https://www.socialplatform.org/public-procurement/). McEvoy (2019) advocate social considerations into procurement; yet, objectives concerning the digitalisation of the social economy are not expressively considered.

[168] Basic digital competences, refer to "*the confident and critical use of information society technology for work, leisure, learning and communication"* (European Parliament, 2006)

business acumen and technological capacities[169] therefore act as integrator across the complementary domains.

From our study emerged that one of the most important steps is providing the framework conditions for a digital social economy by ***'developing and nurturing a tech-friendly environment for social economy entrepreneurship'***. This includes, as mentioned, an adequate level of digital infrastructure as well as access to technologies such as open Application Programming Interfaces (aka API, the engine of digital platforms), open source software and hardware, and other advanced technologies, management, strategic and other soft skills for social entrepreneurs.

In providing a policy overview towards the digital skills 'upgrade' of the social economy, we should consider that the social economy's approach to learning is principally through 'case-based/reactive learning'. That is, faced with social or societal problems, the social economy devises strategic approaches towards reaching desired solutions. The extent to which such practices may produce distributed digital social innovation is linked to the level of digital maturity. The emergence of digital social innovation may range from the deployment of simple digital applications, for which only basic digital skills are needed, to the introduction of new digital architectures, for which advanced technical skills and a forward-looking vision may be required. This is particularly important since, in an interconnected and digital world, challenges are either related to digital technologies and their applications or solved by applying digital technologies.

Social economy organisations need appropriate support and guidance to carry out learning activities so that they can move proactively towards digitalisation strategy. Support and guidance should be oriented towards the digital future(s) of the social economy so that organisations may integrate digital technologies and tools in tackling social and societal challenges. To do so, it is necessary to assess the state-of-the-art of the digital transformation of the social economy with particular focus on skills, technologies and practices. This will constitute the base upon which to build on education and learning needs. ***Policies, at all levels, should consider skills, education and learning objectives oriented towards enhancing the capacity, skills and competences of the social economy to interact within an increasingly digital world*** (see further recommendations below)***.***

At **the EU level**, digital skills are very high in the policy agenda. For example, President von der Leyen's Commission places digitalisation at the core of its agenda for employment, social fairness and welfare for tackling social exclusion and poverty, promoting equality through social security, education and infrastructure. This renewed drive is set out to re-invigorate the initiatives already in place such as the *New Skills Agenda for Europe* and the *Digital Skills and Jobs Coalition* with the ambition to develop a comprehensive education and training framework aimed at a digital social economy fit for the 21st century.

Based upon the experience gained during the development of the DigiComp and EntreComp and the positive outcomes and impact they are achieving, ***the EU should design a 'DigiSocEcComp' (Digital Social Economy Competence Framework) to develop the skills and competences of the Digital Social Economy***. DigiComp and EntreComp have been developed pooling together with experts and practitioners from around Europe to contribute with their own specific knowledge and competences and then they have been extensively validated. The Digital Competence Framework (2.0) identifies key digital skills and competences such as information and data literacy, communication and collaboration skills, digital content creation, safety and problem solving, whilst the Entrepreneurship Competence Framework defines entrepreneurship as the capacity to act upon opportunities and ideas to create value for others and identify key skills, knowledge and attitude of entrepreneurs that would facilitate such activities. The frameworks provide extremely valuable resources for educators and trainers to develop and assess individuals' skills, design teaching and learning activities in classrooms and for employees training etc. A similar framework, including the insights from digital and entrepreneurial competence, and tailored to the social economy may provide extremely valuable.

[169] Technological capacity is linked to digital maturity and may vary between basic business skills and more advanced technical skills such as system integration and new digital architecture design.

Another critical outcome of our study highlights that many digital social economy organisations, do not stop to explore new possibilities and opportunities of further digitalisation. In particular, it emerged that digital social economy organisations are conducting routinely scouting activities as integral part of their ongoing operations. These organisations are constantly looking at new ways to increase efficiency, boost effectiveness in carrying out operations and introduce new ways of doing things or new services and products. It is also important that directed efforts by the EU are devoted to collect, systematise, analyse and disseminate widely social economy's good digitalisation practices and its operations in order to provide digital social economy organisations and those willing to adopt a digitalisation strategy with best/good practices/use-cases. Far from suggesting that these become templates for replication, they provide the most valuable learning tool for benchmarking own operations and indications of pathways to successful digitalisation for social economy entrepreneurs.

Therefore, we recommend that the EU persists in its efforts to collect, analyse and systematise good practices and tools that might boost social economy's digitalisation. The focus should be in highlighting new (joint) digital designs, learning outcomes from digital transformation and social value creation through digital means.

The effort of the Commission in this direction has been sustained and provided support to many such initiatives either through its Joint Research Centres (ICT-Enabled Social Innovation case collection, mapping and case studies – the IESI project) and through social innovation research projects such as SI-Drive in FP7. To carry out such recommendation, further effort should be put into systematising and analysing the evidence in the light of new and emerging trends in the digital transformation of the social economy in order to provide analytical and policy relevant recommendations. This study might be seen as a first step by the identification of several best practices and designs in relation to specific technologies. Hence, providing an analytical framework for the broader understanding of the digital transformation of the social economy.

It is necessary that such activities are carried out centrally (at the EU level) and disseminated across Member States via regional and local associations as well as any other reference point of the social economy in order to achieve a capillary reach.

The national level is the natural setting for the development of education and learning curricula from primary education to higher and lifelong education. The objective should be that of integrating the skills and competences needed by the social economy both in terms of digitalisation and include management, digital social innovation, strategy and digital social entrepreneurship. In other words, national governments should engage in raising awareness of the importance of the social economy and the digitalisation process with specific reference to the application of advanced technologies, digital management practices, digital social innovation and strategies for the social economy. National government should take the opportunity to capitalise on existing teaching and learning networks to foster the digital social economy agenda for skills and competences.

National government should form new or equip existing national associations of social economy organisations and networks to provide advice on the digital transformation to budding social economy entrepreneurs, their active members and associates.

Moreover, in the higher education sector, there are numerous emerging programmes including undergraduate and graduate courses, executive and further education programmes engaged in training and education for the social economy. This is true also for research on new technologies and new technological applications (development and translation). In fact, in many universities across the EU, there are increasing numbers of learning programmes and academic research activities including social entrepreneurship and digital technologies for the social economy. Also in many circumstances, traditional university institutes such as incubators and accelerators are focusing on staff's and alumni's social projects, providing coaching and guidance through their start-up process.

Therefore, ***national government should encourage federations of national research centres and universities to conduct research and teaching for the digitalisation of the social economy.***

It is, in fact, critical that access to research-based education for the digital social economy becomes part of the mission of these nation-wide networks.

A challenge will be to design a digital skills framework for the social economy, embracing several levels maturity for basic IT skills and specific technology related skills. Such a framework could include not only technology related skills, but also application focusses such as the development of technology to assist or employ target groups and technology applications in several sub-sectors (such as cooperative energy sector).

kills, education and learning activities are delivered to individuals often through blended learning, in face-to-face settings including demonstrations with online/digital means and support. **Local initiatives** have an extremely important role to play in setting up and promoting such activities.

Local authorities should endeavour to work with schools, universities, clusters, local technology incubators and accelerators, and other instituted organisations.

What we suggest is that local authorities should take advantage of the opportunities offered by existing programmes and initiatives available within the community and refer to European initiatives already operating within the region. For example, local authorities may need to take a more active role in the Digital Innovation Hubs or the Digital Skills and Job Coalition[170] in order to promote locally those skills, education and training for the digital social economy agenda. At the local level, many opportunities are currently being explored albeit in a non-systematic manner. For example, some schools and adult/further education establishments are interacting directly with the social economy and with digital social economy entrepreneurs to organise action-learning initiatives. These interactions bring to the fore issues linked to the digital transformation of society, social and societal challenges and issues such as the environment and the circular economy.

To this extent, we recommend that ***regional and local authorities support schools and education centres to involve digital social economy entrepreneurs for hands-on demonstrations and action learning***.

In the last decade, universities have been ramping up their involvement with the social economy by undertaking research and teaching reflecting upon the third mission[171]. Also, advanced programmes, specific to the digital social economy, are increasingly integrated into technology, entrepreneurship and innovation programmes, i.e. at master level. Clusters and technology incubators and accelerators, often organised in partnership with entrepreneurial universities, are already present in many European regions and have demonstrated to be particularly effective in knowledge transfer and applications in a number of sectors[172]. In brief, there is a host of initiatives carried out locally in numerous parts of the European Union, which focus on the social economy, digital social innovation and digital social entrepreneurship competences.

Based on the evidence collected during this study, ***universities should be encouraged to work with other teaching institutions and social economy partners in order to integrate structured and advanced teaching and learning focused on the skills and competences of the digital social economy***. In fact, we highlighted (§5.3 above) that many universities in the EU are already engaged in such training and learning activities carried out by extending undergraduate and postgraduate programmes to digital social economy topics through, for example, collaborations

[170] In fact: "*All organisations who take action to boost digital skills in Europe can become members of the Coalition and pledge to take actions to tackle the digital skills gap. Actions can range from training unemployed people, giving MOOCs for teachers, offering coding classes for children or cutting edge training for ICT specialists*" (https://ec.europa.eu/knowledge4policy/online-resource/digital-skills-jobs-coalition_en).

[171] The third mission of universities consists in generating and transferring relevant knowledge outside academic environment for the befit of social, cultural and economic development.

[172] Although the early biotechnology cluster initiatives disseminated throughout Europe had contrasting impact, the concepts of clusters, incubators and accelerators are seeing resurgence and are registering interesting results in terms of outcomes and impact at the local and national level (http://www.clusterobservatory.eu/index.html)

with social economy entrepreneurs and organisations for focused/targeted executive education programmes.

There are many synergies between traditional start-ups and social economy start-ups in terms of knowledge and technology transfers. These are going beyond the boundaries of formal business skills, education and learning organisational settings. Such synergies may be exploited by opening up science parks and traditional business start-up incubators to social economy start-ups. In fact, operating in locations with high tech intensity, side-by-side tech-businesses and entrepreneurial higher education institutions, the social economy may find its place in a tech-friendly environment conducive of digital social innovation. The objective is to activate virtuous cycles benefitting the local communities and the social economy.

Local government and development agencies should promote and provide incentives for the integration of social economy start-ups in existing technology and innovation incubators. These initiatives should necessarily include intermediaries, co-working spaces, and digital/social entrepreneurship coaching/mentorship. Experience such as those described in §5.3 above involving university incubators and local authorities should be encouraged in order to provide a safe space for social economy organisations to experiment with technologies, business models and receive coaching and start-ups consulting.

Fostering Collaborations

Policymakers and the social economy should exploit the enabling features of collaborations. Through collaborations, social entrepreneurs and organisations can work towards specific tasks that each alone would not be able to tackle. Collaborations also spur shared learning. During collaborative work, each party may learn from their peers.

Intra social economy collaborations are the most diffused form of collaborations within the social economy, such organisations engage in collaborative exchanges of information and practices with peers operating according to similar values and principles. These are very important since they constitute a form of mutual learning in addressing social and societal challenges. This way, social economy organisations exchange experiences in carrying out social action as well as sharing experiences connected with the digital transformation highlighting changes in their operations, carrying out their digital strategy and giving/receiving guidelines and advices in solving impending issues. These collaborations may be undertaken within the boundaries of associations such as European-wide associations or nationally where some association such as Social Enterprise UK in the UK and Lega Coop or ConfCoop in Italy organise collaboratives events. Alternatively, collaborations may happen independently, perhaps at a more local level between social economy organisations with their users, beneficiaries and other stakeholders sharing similar issues or collaborating to solve collectively social challenges by setting up co-creation and co-production processes.

Social economy organisations may engage in collaborations with other organisations outside the social economy: governmental agencies, for-profit companies. For example, collaborations between social economy and for-profit organisations may provide ample space for learning and in a fast-paced digital world. The examples of Simplon in France, Mfore in Finland and Elderbrook in Germany evidence substantial benefits for - and learning by - the social economy from their business collaborative counterparts. The SBI follow-up report (2018) highlights also that such collaborations, especially in areas of social training, healthcare, and social care for the elderly, started-up longer-term technology-focus projects.

Fostering the agenda for the digitalisation of the social economy, key collaborations may be undertaken with research centres, consultancies and ICT companies that are already engaged in research and innovation and may help with the knowledge and technology transfer process. These may enable social economy entrepreneurs to identify appropriate digitalisation strategy, fitting technological applications and ultimately may engender processes of development and adaptation of novel technological solutions to the needs of their beneficiaries as well as to their own social economy enterprise.

In the section dedicated to Access to Resources above, we have identified that enhanced access to R&I collaborations programmes is the way forward to incentivise the social economy to carry out structured digitally related research, development and innovation activities.

The EU should therefore support active engagement of social economy organisations in R&I projects, especially those involving large collaborative undertaking focusing on digital platforms and advanced technologies such as DLTs and Blockchain, AI, Big Data analytics and IoT.

The rationales for such collaborations are multiple. For example, a significant share of the R&I project calls in many EU programmes are concerned with social and societal challenges. The social economy has traditionally been at the forefront of these challenges and social economy organisations have a host of valuable experience in dealing with such issues. These may be transferred to the R&I collaborative undertakings and the social economy may benefit directly from technological solutions deriving from R&I projects. In addition, engaging social economy organisations in large collaborative projects has also the advantage of introducing the principles and values of the social economy in what would otherwise be R&I with marketable objectives.

There is no doubt that collaborations amongst social economy organisations and between social economy organisations and other parties (government, businesses, users) may be conducive of benefits and opportunities for the social economy. Collaborations may help the diffusion of best practices, peer-to peer learning in digitalisation, benchmarking and assessment of social impact. It is critical that the digitalisation of the social economy relies on **national** fora promoting open collaboration practices were also government agencies would be involved. For-profit businesses may be incentivised to collaborate.

National governments should provide both incentives and support to collaborative digital social innovation activities, which may produce spill-overs beyond the parties involved, such as positive effects on social and societal impacts, modernisation of the social economy and generation of economic and social value.

Incentives may not necessarily consist in the allocation of extra funds for the social economy, which nonetheless will be beneficial as in the case of public social partnerships set out in Scotland (Cfr. Chapter 5.3 above). Incentives may consist in leveraging 'in-kind services' and technology transfers as in the case of France where current legislations provide a 60% tax incentive to private companies to 'lend' their staff to social economy organisations or transfer dismissed ICT equipment to social enterprises.

Another aspect to take into consideration is that proximity favours direct interaction that may lead to collaborations. Social economy actors may collaborate with peers with similar digital agenda and programmes, facilitate exchange of knowledge and the building of digital skills and competences, and calibrate technology deployment collaboratively with users and beneficiaries.

Most of such interactions happen at the regional and local levels.

It is therefore recommended that regional and local authorities should promote collaborative spaces and commons organised as cluster organisations, digital innovation hubs, and technology incubators and accelerators[173] in order to enable collaborations between the various stakeholders of the social economy including universities, for-profit tech companies, and local government agencies.

Incentivising local collaborative initiatives to develop digital social innovation as direct responses to local and regional social issues may be a valuable way to engage with local stakeholders. At the same time, these collaborations may be aimed either at modernising the local social economy or at providing locally developed solutions to social issues. These may be enacted by promoting activities such as the public social partnerships described above or involving traditional businesses in

[173] A model of technology accelerator may be drawn from the Social Good Accelerator operating in Paris: https://socialgoodaccelerator.eu/

sponsoring civic crowdfunding[174] initiatives to provide local solutions to social problems. The involvement of universities, as we have seen, is essential for R&I activities and education and training. University-social economy collaborations may also foster longer term partnerships whereby 'useful' technologies and technology governance models may be co-created and deployed more effectively given the complementary competences of universities and social economy organisations.

Laws and regulations

Harmonising at an EU level the plethora of legal forms of social economy organisations is particularly important when considering cross-border activities, such as international social and societal actions, international collaborations (also in R&I programmes) and cross border provision of good and services (increasingly common through digital platforms). Harmonisation will help social economy actors and organisations, including social enterprises to quickly and effortlessly identify appropriate counterparts in other areas. Moreover, it is also important to understand that operating with advanced technologies in the social economy may introduce ethical and governance issues that transcend national boundaries, laws and regulations.

The EU should harmonise the legal forms and statutes across its Member States. Of course, it should also be understood that social economy organisations may have several legal forms, and, especially at the start-up phase, there might be the need to operate in less burdensome organisations. For example, in Greece, many of the new digital social economy organisations do not have a legal denomination. However, it is necessary that legal forms are commonly understood and mutually recognised across the 27 Member States (and eventually, within the EEA).

The use of digital platforms and advanced technologies such as DLTs and blockchain, AI, Big Data and analytics Cloud Computing and IoT, originally developed and implemented by and for the business economy, may clash, as we have seen in chapter 3 and 4, with the principles and values of the social economy. For the digital transformation of the social economy, it is necessary that the introduction of these digital artefacts reflects its principles and values, and, in each country, it is necessary that experimentation and rigorous evaluations are undertaken under controlled conditions. Questions such as 'what are the consequences of developing and deploying advanced digital technologies for inclusiveness, (digital) democratic governance and data sovereignty?' should be answered before committing to technology adoption.

To this extent, ***national governments should provide regulatory sandboxes, conduct ex-ante constructive technology assessments and ex-post regulation evaluations.***

This is particularly important, especially in such areas where both the practical and ethical consequences of the deployment of digital platforms and advanced technologies may be affecting social and economic relationships.

As a consequence, ***national governments should also identify practices of misuse of platforms or digital technologies and use these as lessons for further improvement.***

[174] Civic crowdfunding initiatives, carried out by citizens, collect and fund local regeneration projects.

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7 ANNEXES

I – Full country profiles

II – List of Digitally Enabled Social Economy initiatives reviewed

III – Forward-looking statements and survey results

IV – Policy co-creation workshop

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