**WiseLifeLab** - Dept. of Economic and Social Sciences, Mathematics and Statistics, University of Torino. Authors: Vincenzo Giorgino, Sowelu Avanzo, Giulio Peraldo.

26 May, 2020

*Any use of the 3S protocol is permitted except for commercial uses.*

**The 3S protocol: *Social Shield Shaper.***

**Protecting, Flourishing and Commoning at the time of Covid-19 and beyond.**

This document is part of a wider project aiming to develop a wise and just co-designing of glocal ecosystems. It grounds on a transdisciplinary and enactive perspective. Dichotomies such as decentralization vs centralization, networks vs hierarchies are oversimplified assumptions with poor ground in real life and empirical research with risky consequences in digital designing. We intend human interaction as *relational work* (Zelizer) performed by embodied actors acting under constraints (time bound, with limited knowledge and attention) and basically constituted by four elements: social ties, kind of interactions and transactions, tools for those interactions/transactions and negotiated meanings.

Humans as living organisms interact between each other, with nature, things and technologies and are able to self-transcending (Giorgino and Walsh 2018). They are concerned about life along various degrees of self-regarding and caring for themselves and others. Life-protection and flourishing towards Covid-19 and other forms of expected and unexpected emergencies could be digitally enhanced if oriented to the commoning (Bollier and Helfrich 2015, 2019); it affects also the other forms of economic activities (markets, household and state) in this stage of *Great Transition*. (Giorgino and Walsh 2018).

A proximal view is expressed by the concept of social bridges in the network analysis of fintech:

“Social bridges, i.e. the pattern of physical interaction between neighborhoods, predicts purchasing and financial decisions three times better than traditional demographics .. Groups of neighborhoods joined by rich social bridges form local cultures. Consequently, by knowing a few places that a person hangs out in, you can tell a huge amount about them. … The process of learning from each other by spending time together means that ideas and behaviors tend to spread mostly within the cluster, but not further. A new type of shoe, a new genre of music, a political viewpoint, will spread within a cluster of neighborhoods joined by social bridges, but will tend not to go across cluster boundaries to other places. Marketers talk about influencers changing people’s minds, but the more powerful effect is that when people spend time together they begin to mimic each other, they learn from each other, and they adopt similar behaviors and attitudes.

… Where you invest your most valuable resource – time -- reveals your preferences. Each community typically has access to different pools of information, opportunities, or offers different perspectives. Diverse interactions should then increase a population’s access to the opportunities and ideas required for productive activity and economic growth”.

“...Moreover, the idea of “rational individuals” is not what Adam Smith said created the invisible hand. Instead, Adam Smith thought: “It is human nature to exchange not only goods but also ideas, assistance, and favors…it is these exchanges that guide men to create solutions for the good of the community.” Interestingly, Karl Marx said something similar, namely that society is the sum of all our social relationships. The norms of society, the solutions for society, come from peer-to-peer communication – not just from markets and not just from independent individual reasoning. ” (Pentland 2018).

This document aims to describe the functioning of a protocol we are designing. Its aim is to provide protection from pandemics and from emergencies in general, envisioning new forms of provisioning supported by the Internet of Values. At the time being, some aspects such as the governance and the integration of the discount tokens minted by different actors (i.e. businesses and associations) are in development.

The practical objective is, in a more general view, to provide financial resources to projects or purposes that are needed by the community, and to create forms of cooperation between different people and businesses. This system will also help businesses to increase their revenues, providing a new form of collective funding for the Small Medium Enterprises (SMEs).

We will describe our system by examining the two main processes involved: funding in the first section, and usage in the second one. The last section is focused on the collection and valorisation of personal data as related to both processes.

1. **Funding process**

**1.1. Hera Token: the Membership Card system**

This system is based on tokenized membership cards that a network of associations and businesses sells to their clients or other members of the local community. Each membership card rewards periodically the holders with a certain amount of a complementary currency (CC). This CC allows clients to benefit from discounts at the business where the membership card was sold, since it is accepted as a means of payment at a minimum and a maximum percentage established by a legal contract. The contract also establishes the minimum dividend in CC distributed by the business without any superior limit to the token supply, which is decided by the business. Since the contract backs the currency issued by the local business, it should be uploaded on the platform so that it is visible to everyone. In other the system allows the business to receive liquidity in exchange for future discounts to the clients. It is worth noticing that these tokens are accepted only up to a certain percentage of the total price of the goods and the remaining part of the payment generates national currency revenues for the business. Moreover, since the discounts might impact positively on sales volume, they would foster circulation of goods and services and incentivize all actors to establish long term social ties, entailing client fidelization for the businesses and cost reduction for community members.

Membership cards expire after a certain amount of time, forcing the customers to repurchase them in order to receive more discount tokens and refinance the business.

The minimum percentage of national currency required at each payment (being the rest paid in CC) might differ significantly from business to business, and is decided independently from the other members of the network. Activities will likely choose an amount that allows their business model to be sustainable over time, by seeking an optimum between the reduction of margins and the increased sales due to the discount system. Each business is **completely responsible for the mintage** of its tokens and can decide the quantity of tokens to supply; it **is fully responsible for their backing**, which means that the tokens are exclusively used to buy goods and services sold by the business minting them, which is legally obliged to accept the tokens at least at the percentage that was agreed upon in the contract.

**1.2. The Consortia**

This system of independent discount tokens clearly generates a problem of scalability, which can be solved by building consortia of businesses, that is a network of businesses willing to establish long term ties between its members, and to share resources and governance for common aims. Consortia can use the same system as the single business to mint CCs by selling each business a defined quantity of membership cards of the consortium itself, entitling each of them to receive dividends in Consortium CC periodically. This will circulate both within the network, allowing B2B discounts and outside of it (B2C). DAOs would be used for the governance of both single businesses and consortia. While, however, the single business might have quite a simple governance, the consortium, having to pursue the common interests of all its members and including more participants, surely has to be defined in a more formalized and sophisticated manner by relying on smart contracts. In line of principle, however, the consortium, like the single business minting the membership cards is fully responsible both for the backing and the quantity of tokens supplied. Another responsibility regards the circulation of the CC within the network of businesses and associations, which should be enhanced.

The creation of a consortium potentially solves a problem which is inherent in the system involving a single business: the risk that the business backing the membership card’s dividends may go bankrupt or that for some unforeseen event ceases to sell the goods and services at issue. This problem is solved at a consortium level: since bankruptcy is a quite extraordinary event in the life cycle of a membership card, that, however, might occur, the consortium could decide that the future dividends that would be distributed by the business going bankrupt are converted into dividends in consortium tokens.

The common fund collected by selling the consortium membership cards, would be managed by a DAO. These resources would be considered as a commons for shared aims, to solve common challenges and promote projects for the consortia. The aim of the expected on/off chain governance is to allow all the members of communities to be actively involved in decisions regarding the economy of their community. This will likely be carried out by implementing a voting system allowing each membership card holder to express his or her opinion on some specific issues concerning the entire community, such as those regarding the management of the common fund. The problems relating to the management of commons are known and among the solutions on the theoretical level the branch of game theory relating to auctions must be considered (Bell and Parchomovsky 2014).

This system should also leave business members enough freedom to decide on issues that interest them more directly, such as the mechanism regulating the Consortium token supply. The system should also avoid the concentration of decision making power in the hands of few wealthy partners who can afford to purchase the majority of the membership cards. The innovation would also concern the governance model, because the membership card holders, that are likely clients of the businesses within the consortium, as well as the business holders would participate in the governance of the common fund collected by the consortium. Governance systems allowing such designs are many, and few of them are of high interest for us, for instance Holacracy, Quadratic Voting and Token Curated Registries: “On-chain governance does not imply decentralisation. If a reputation system guides the voting power, then a DAO will be a meritocracy. In fact, a DAO can implement pretty much any governance model, including an oligarchy or autocracy or some community-oriented mechanism. In any case, the true decision makers are necessarily off-chain entities” (Karjalainen 2020; see also Lalley and Weyl 2018).

Businesses can decide, either occasionally, or systematically to distribute as a part of the dividend entitled to their membership card holders the Consortium tokens they own, or tokens of other target partners with whom an agreement is reached on this point. This would allow more complex interactions that should be studied via agent-based modeling inspired by the conception of wise agents and game theory in order to design the best possible functions that could be encoded in the smart contracts in order to reach the best potential outcome for the group. A demurrage fee could be applied to both types of discount tokens (individual and consortium) fostering velocity of circulation of goods and services within the community. Alternatively, an expiry date that may coincide with that of the membership card could be decided. Since the tokens are minted autonomously by the single businesses, different decisions can be taken regarding these features.

Businesses and consortia, therefore, are free to mint as many discount tokens backed by their goods and services as they wish, and can also decide to target specific needs via extraordinary policies, such as extra dividends or changing the conditions of acceptance of the tokens within the limits imposed by the legal contract backing them. These actors for instance, can target their clients with promotions by simply increasing the percentage of tokens accepted at each payment (i.e. a green grocer could decide to accept a higher percentage of tokens as a means of payment in a season when he or she receives a larger amount of perishable fruit or vegetables in order to increase sales). Other fidelization actions can be designed, such as distributing extra dividends to only certain customers based on specific criteria. These possible promotions should be described transparently in the legal contract.

Moreover, while dividend distribution within the stock market follows cyclical patterns, in this case, the discount tokens distribution has countercyclical effects on the economy. This is so because an association or business that is financially stable doesn’t need to exceed the contractual dividend that he is obliged to issue. If a business instead is in need of immediate sources of liquidity because it is not financially stable, it can rely on minting and/or distributing more discount tokens than it is obliged to. If the clients of a local business, for instance haven’t shown up in a while, the business holder can decide to increase the amount of discount tokens distributed, boosting, therefore its revenues by promoting new potential sales.

This would allow the businesses that are more in need of liquidity, and that can provide more backing through their goods and services to rely more on this source of financing, which also provides a value for the community (cost reduction via discounts).

This technology overcomes the traditional conception of producers and consumers as two separate groups, and establishes a form of cooperation between actors within the same community which creates new forms of mutually advantageous social ties. In such a context all community members would be interdependent with one another and, therefore, align their interests in managing common resources.

In an ecosystem adopting such technologies like the one described, the owners or managers of the businesses involved in the consortium would be incentivized to consider clients as potential long term stakeholders and source of financing. The opportunity and cost of obtaining financing for businesses and associations depends on the value that the goods and services supplied have for the community, rather than on their price in national currency. Therefore, cohesion, reciprocal support and circulation of goods and services would be maximized in such an ecosystem.

The money raised in this way will be sent to a central fund that will manage the second part of the system, the usage process. In order to stimulate the businesses and to give them an alternative funding resource, a percentage of the raised fiat money is detained by the SMEs. This percentage is crucial, because setting an high percentage favours the businesses and their development, funding directly the businesses and helping the local economy, while setting a low percentage will give less money to the businesses and favours the development of the community project (or, as we will see in our use case, the volunteers insurance and safety).

1. **Usage process**

**2.1. Possible employments of the consortium fund**

From a more general point of view, this process varies from use case to use case. The funding process can help to finance all kinds of projects, considering that the membership card token mintage is not constrained, and can be used to collect cash for an unlimited amount of time, entitling discounts in a limited amount of time, due to their fixed expiration date. Moreover, the shared governance of the common fund would force this to finance projects for the common good of the businesses and the community.

One common goal would be to finance business enterprises that are helpful to the community as a whole, that would, therefore enhance the reputation of the businesses involved in them, because decided collectively with the membership card holders.

We imagined that in our use case, this common fund could be used to support the shift to green mobility, such as cycling. It could even lead to funding a business collectively governed by a DAO, that could for instance manage a bike sharing service in the area. This mobility service is particularly needed in Europe, especially in its most polluted cities.

Another function that such common fund could perform is to help businesses belonging to the network that are most financially unstable by lending at a zero rate within a mutual credit system. In our use case in the context of the Covid-19 emergency this helps food producers and retailers. The former experienced a disruption of their supply chain, whereas the latter were forced to close during the lockdown.

Thirdly, an insurance buffer against financial risks of the community could be created with the fund, support volunteering activities, or provide the weakest members of the community, such as workers in the gig economy, or informal carers in household economy and similar conditions with PPEs and an income for the emergencies and related policies, such as a lockdown.

In the use case at stake the common funds are used also to target those most affected by the lockdown in terms of existential, social, and economic, suffering infected or not.

Time-banking systems can be designed and integrated with the ecosystem to facilitate and enhance volunteering activities for instance by rewarding the card holders with hours spendible in the time bank.

**2.2. A use case: the Emergency Insurance Fund**

Should the regular insurance buffer prove insufficient to respond rapidly to unforeseen events, the community could also create (via the same technology) purpose driven emergency funds. An example of this is one of our use cases, where a large group of volunteers delivering food and essential goods in the Covid-19 emergency lacked adequate protection and insurance against the infection. For such purposes, in order to collect cash more swiftly, instead of relying on the membership card system, which establishes long-term ties between its users, the local businesses and associations mint a purpose driven token named insurance card. This works as a prepaid card rewarding the community members purchasing it with a specific amount of consortium or individual discount tokens in CC. The customers of the businesses buying the insurance cards would benefit from such tokens because they would increase their purchasing power, because they would be rewarded with more tokens than the euro spent (i.e. a 20 euro insurance card would entitle the holder with 25 euro worth tokens). The tokens work as described above, so the cost for the businesses accepting them as means of payment is at least balanced with the increased sales deriving from fidelization.

Businesses and associations selling the cards would necessarily receive a part of the profit from the sale of the insurance card, but the most of the fund would finance the insurance fund to tackle the emergency situation.

In order to meet the two objectives, a DAO is programmed to distribute a small revenue in national currency to those who lack sources of income allowing him or her to be economically independent or any form of protection from the lockdown policies, the system would distribute to him or her CC discount tokens. The DAO would be programmed to minimize the costs for the insurance fund, also by distributing a higher amount of tokens of the consortium in the periods when this lacks national currency.

Moreover, much work must be done for the design of self-insurance at community level. A P2P insurance scheme could benefit from the recent developments in the field of prediction markets and specifically to reverse game theory (Zhu et al. 2009), in which risk is distributed to a crowd.

1. **Health and Personal Data Sovereignty**

Personal data would be managed as a valuable asset in this system, and regarded as a commons. More specifically, the group should benefit at a collective level from the data valorization. This feature is particularly important considering that in such insurance system sensitive healthcare data should be collected as well. So far, the principle of *data sovereignty* comes into play as the right of each individual to control her own data.

In his proposal of a data policy for platform cooperatives, Carballa Smichowski (2016) classifies data into three types - Volunteered data, Observed data and - metadata. “Volunteered data” (data provided directly by a user such as profile information, photos, lists of contacts, etc.; the author implicitly states that all data are consciously given, but it sounds more close to human experience to classify personal data as intentional and unintentional data), “observed data” (data on how users behave when using a platform or a browser) and “metadata” (data generated through the analysis of volunteered or observed data; i.e. data about data):

“If a market for personal data was introduced, users would be able to sell volunteered and observed data. The problem is that, especially in the sharing economy, observed data is highly relational: if person X rents a house from person Y using a platform, that data refers to both X and Y. The link does not stop here. This can also be the case with some volunteered data like photos where more than one person appears or a contact list. There would be a practical problem with a market for data because virtually all the individual users would need to agree for the data to be exploited in a useful way (Prins, 2006; Bellanger, 2014). Then, following our example, millions of house-renting platform users should agree to sell their data to the same provider for it to be able to use their observed data. Since probably many would not agree, there would be incomplete datasets, which would limit the usefulness of data compared to the current situation.

This can be done in two ways: by making data a common or by putting data in the public domain. … One the one hand, using licenses (which, contrary to the public domain, implies having property rights) allows to reconceive property rights over data as a bundle of rights. This, as we will show, can be a mechanism to foster platform cooperatives,... On the other hand, being that the use of data implies many delicate issues regarding privacy, a properly designed co-property over data between stakeholders as the one we intend to set the basis for seems to be more appropriate to guarantee privacy than the public domain because it would offer a system of checks and balances and the power to exclude people from the use of the data, something that is not possible when data is in the public domain”.

We agreed with the definition of commons as based on a) A shared resource (material or immaterial); b) A bundle of rights that specifies how the resource is shared between the commoners. The bundle of rights links the commoners through a system of reciprocal rights and obligations that can be rooted in a legal property regime (contract law, patent law, copyright law, etc.) or in customary law; c) A governance system of the resource which purposes are to assure the respect of the rights and obligations of the commoners and the outsiders (those not having rights over the resource a priori) and to solve conflicts of interest (Coriat 2015) .

As Carballa continues “All the databases that contain volunteered and observed data from sharing economy platformsare legally considered to be the property of a council, that could in the protocol proposed above with the consortium formed by the relevant stakeholders. The council has a governance system that can vary but that should ensure that all the stakeholders are equally represented. The databases containing volunteered and observed data are protected by copyright law or sui generis database right and copyleft reciprocity licenses are applied to them. Decentralized technologies based on blockchain that could assure both privacy and the ability to exploit the data. This would assure that even if several platforms can access a user’s volunteered or observed data, their identities would be kept secret” (see also Hardjono and Partland 2019 and <https://www.media.mit.edu/projects/enigma/overview/>).