

Economic Commons

A Stellar Decentralised Commitment Sharing Game

Think of it like the Karmic Ledger in real time

*Self serve open access is a big deal
Imagine a system where everyone has equal access*

*Yo hommies in da crypto sphere
Satoshi gave y'all da doble spend
Y y'all mother uckers blew it
into perverse incentives*

*Dat one big smelly bubble full a
Hype subsidised gas fees to the moon
It's gunna die on impact
with the scent of musk.
Or was that coined the shiba-doge*

*Do ya wanna stake ur reputation or just ur bling
We gunna rain dat bubble down
Spin it round
into the ground*

*Reconcile the ledger south on top meow
With a commitment sharing game
Or is that a pooling protocol
or just a hol lotta wow.*

*Don't worry bout me
I'm just cooking up a virus
in ze estrellar lab
Dats gunna give yeowll immune
To the shits that's playin tune*

How committed to sharing r u anyway?

Introduction:

Creating Economic Commons through commitment sharing/pooling is the basis of many indigenous culture's traditional economic systems. Grassroots Economics has been documenting and supporting the revival of traditional indigenous Kenyan economic systems called Mweria. In this process the communities are now using digital vouchers held on decentralised ledgers that are accessed via a digital wallet on their phones to manage their value exchanges and resource commitment pools in polycentric economic systems. Grassroots Economics has created a "commitment pooling protocol" that is technology agnostic allowing anyone anywhere in the world to experiment with creating an economic commons using the protocol and whatever technology they have available to them.

"Pooling of commitments, is a mechanism for curating and fairly exchanging resources within communities. This approach hinges on the idea that **commitments can be effectively pooled to create a more equitable and collaborative economic system**, building on the efficacy of traditional mutual service practices." (Will Ruddick, Grassroots Economics)

The intention is to see if playing with these concepts in a game and experimenting with commitment pooling/sharing could serve as an effective coordination mechanism and support the flourishing of a decentralised economic commons. Gisela Kaplan explains how birds have shown us that play is the best

indicator of intelligence and the best mechanism to develop innovative culture (not tool use as so many particularly men believe is the case). The game of Monopoly which was a part of my upbringing and is fairly pervasive throughout capitalist based colonial imperialist culture, teaches people how to play with pretend money which in turn, through the process of playing with money and learning how it works, makes money “real”. In this way it is very important to understand that money is only real to the extent that we share the agreement (social contract) that it is real. If some people don’t believe it is real and think that the real value lies elsewhere then that is true for them too and in fact “real” money has no value for them in that regard. Money and value are social constructs that rely on the societal social contract to give them validity. Money is really just a token representing a group of people’s shared / pooled commitments. For the purposes of this game we do away with real and pretend money as tokens and instead create a diverse ecosystem / pool of Digital Commitment Vouchers (DCV) that represent the resources that each player is committing to the game.

The following is a riddle you have to guess the moral of the story;

*It’s a slow day down by paradise pool in crystal creek out in front of the local village hostel...
The sun is hot... the streets are deserted coz everyone is taking a dip in the pool
Shit has hit the fan and the old global economy is depressed, money has become scarce because the elites
have hoarded it all away in their investment banks, and are charging too much interest for loans.*

*A cashed up tourist from up North comes driving through town.
He stops at the hostel and lays \$100 bill on the desk saying he wants to inspect the rooms
Upstairs in order to pick one to spend the night.
As soon as the man walks upstairs, the caretaker grabs the bill and runs next door to pay his debt to the
butcher.
The butcher takes the \$100 and runs down the street to retire her debt to the pig farmer.
The pig farmer takes the \$100 and heads off to pay her bill at the feed store.
A woman at the Farmer’s Co-op takes the \$100 and runs to pay her debt to the local prostitute,
Who has been flourishing because he has been offering his services on credit
In a flash he rushes to the motel and pays off his room bill with the hostel caretaker.
The hostel caretaker now places the \$100 back on the counter so the tourist knows nothing.*

*At that moment the tourist comes down the stairs, picks up the \$100 bill, states that the rooms are not to his
liking and pockets the money and leaves.*

*In that brief moment... no one produced anything...and no one earned anything....however the whole town
is out of debt and is looking to the future with much optimism*

*A different tourist arrives every week and puts a different object on the counter and the same cycle of
exchanges takes place...It doesn’t matter what the residents of crystal creek use to settle their debts as long
as they all agree to use the same thing.*

Experimenting with the principles of Grassroots Economics (organising at the community level) and the commitment pooling protocol in a playful way with members of the community who are interested, using simple, sustainable, open source decentralised technologies could potentially serve as scaffolding for creating more economically resilient communities that are less reliant on the imperialist money / currency based economy.

Following are words of encouragement from Will Ruddick quoted from the end of the “Commitment Pooling - an economic protocol inspired by Ancestral Wisdom” paper (2023).

“I’ve attempted to appreciate the ancient wisdom of indigenous mutual service practices and distill these learnings into the formalization of the Commitment Pooling Protocol. For me, it is more than a mere tool or protocol; but can lead toward an embodiment of mutual service, and shared well-being, reflecting our interconnected efforts to sustain and nurture our communities.

My observations as part of Grassroots Economics (GrE) have shown that commitment pooling protocols and principles transcend geographical and cultural boundaries, offering lessons that can revolutionize economic practices globally. We’ve seen how commitment pooling can foster unity and strength, akin to the interwoven roots of grass holding the soil together.

Looking ahead, I hope these insights inspire further exploration and innovation. I invite global thinkers and communities to adapt Commitment Pooling to their unique contexts, facilitating polycentric economic systems focused on well-being and sustainability. The blend of indigenous practices and technology being pioneered at GrE offers a practical pathway to more inclusive and resilient economic systems, aligned with overall wellbeing.

In conclusion, the journey with GrE is an evolving story of discovery and growth that I am grateful to be part of. We stand at a crossroads where ancestral wisdom meets technological potential. This journey requires humility, collaboration, and dedication to the greater good. I am thankful to everyone who has joined and supported this path and look forward to the future.

By sharing these findings, I aim to spark a global dialogue on building economic systems that prioritize well-being. This paper is an invitation to join in a shared journey toward a future where economics encompasses more than finance, embodying a harmonious blend of intentions and shared prosperity.”

1 The Game:

The intention is for this to be a fun and playful, collaborative learning and discovery process. There are two aspects to the game: 1) studying and exploring the theoretical concepts of GrE Commitment Pooling Protocol; 2) experimenting with implementing the principles using simple where possible open source technology that is readily available at extremely low cost. The game is decentralised in the sense that anyone can play it anywhere by just following the open source documentation.

Following are 3 broad principles that could be adopted

1. Transparency & Openness
2. Intimacy & Inclusion
3. Autonomy & Decentralisation

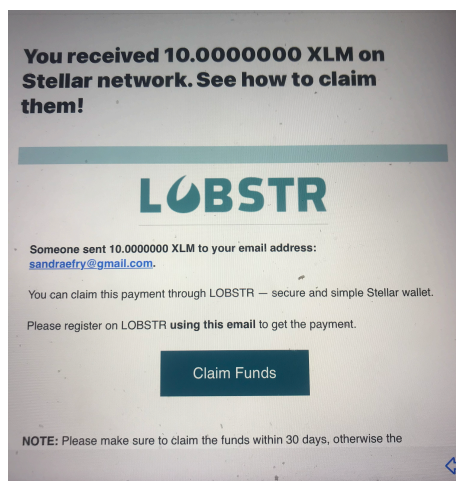
The first instance of the game could involve the commitment sharing of attention to facilitate the development of the game. This is what a first iteration could look like:

- The basic unit of exchange could be 30 minutes of attention.
- We organise a 30 minute video conference call with those people that are interested in exploring the ideas and want to participate.
- If those participating had a quick look over the [“commitment pooling protocol”](#) paper particularly the first couple of pages so that they have an orientation before the session it would make it easier.
- The first 15 minutes of the session could be focused on reviewing the key concepts of commitment pooling and the traditional Mweria mutual service practices and finding answers to any questions players might have.
- The 2nd 15 minutes could be focused on showing players how to download the digital wallet onto their phones and setting up an account.
- Then I could send a Digital Commitment Voucher representing 30 minutes of my attention to each of the players in exchange for the 30 minutes of attention they have given me.

So the outcome of the first session would be a basic orientation to the theoretical concepts of commitment pooling/sharing and for those that choose to download the digital wallet, having a digital wallet on your phone with your own account and 1 x 30 minutes of attention Digital Commitment Voucher.

- They can choose to redeem that Digital Commitment Voucher by requesting 30 minutes of my attention (I could listen to anything that they want to share for 30 min or do whatever they want me to do within reason;), in which case after I have fulfilled that commitment they return the Digital Commitment Voucher (DCV) to me, by digitally sending it to me from their wallet to mine.

The DCV that represents the 30 minutes of my attention is what is called a digital asset. In a future session I could show people how to create their own digital assets, which involves executing 5 easy steps through an open source browser interface to access the Stellar decentralised ledger. Basic concepts around designing these Digital Commitment Vouchers (DCV) could be discussed as well. For example when you create the DCV you decide how many there are going to be and whether or not the DCVs are immutable (cannot be



altered in any way) or whether they are going to be subject to certain operations such as creating more of them, restricting access to them or clawing them back from accounts. When the DCV is created you have the option to link it to a website, which can be used to explain what the DCV represents and why the player receiving it can trust that they will be able to effectively redeem the good or service that the DCV represents at some point in the future.

The idea being that if we have a pool of people that have all downloaded the wallet and have created their own DCV's under the terms that we agree on, then we have created a decentralised commitment pool and have the tools to start playing with it, experimenting and innovating. The intention would also be to document abstractions of any innovations in an open source online repository in a technology agnostic way such that as alternative technologies become available that fit better, the system can be migrated with ease.

2 Setting up a New Player:

When you are setting up a new player please remind them that this is a game; think of it like the liberated version of Monopoly. Monopoly is all about seeing who can monopolise as much of the assets as possible that person is the winner, with this game the opposite is true, as in everyone should be the winner in a virtuous cycle of increasing abundance of collective resources, that minimises waste and excess consumption. But just like monopoly no real money is used, however unlike monopoly we don't use pretend money.

This is a fundamental concept of the game and one which its success completely rests upon. If players treat the DCV's representing goods and services like they would money then it doesn't work (this has been validated by Grassroots Economics in Kenya).

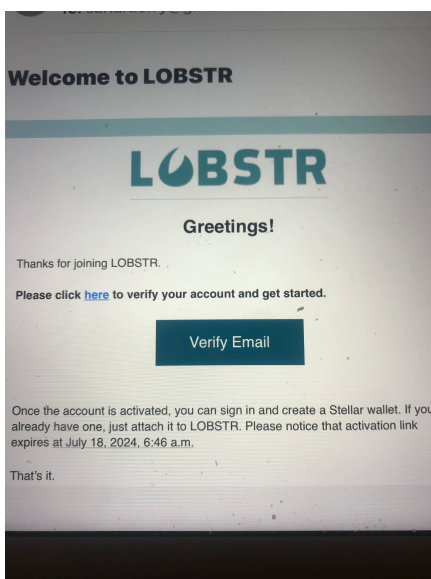
"According to Bergstra and Burgess' (2014) work on Promise Theory, a commitment is a promise that requires a non-returnable investment of resources on the part of the promiser (commitment issuer). Trust, according to Promise Theory, is built through the interdependence and flow of commitments. In a community, the fulfillment of one commitment often relies on others fulfilling theirs. **This interconnectedness means that reliability becomes critical as parties consistently meet their commitments, trust grows.** We will use the term voucher to represent a formalized commitment of the issuer to redeem the voucher as payment for specified goods or services (fulfilling their commitment) with various terms and conditions, such as expiration and transferability (like a subscription).

While any individual voucher could theoretically act as a general medium of exchange, a polycentric interconnected network of pooled vouchers can provide more robustness and resilience. Learning from the rotating labor traditions like Mweria (as we will discuss further), commitments can be pooled in order to be exchangeable for one another. These systems of exchangeable commitments are fundamentally different in many ways from monetary systems." (Will Ruddick Grassroots Economics)

A good place to start once you have on boarded a new player into your commitment pool in the game, is to help them design and issue their Digital Commitment Voucher (DCV). We will go through the design of the DCV after your digital wallet is downloaded and set up. For now it is important that the new player grasp that each player's DCV is unique and they are only effectively interchangeable to the extent that each entity playing the game honours the commitments that they have digitised in the DCVs. The most successful commitment pools will be the ones that have the highest levels of trust between players with regards their ability to honour their commitments.

2 a Setting up and downloading your digital wallet

- you should have received an invitation email from someone like this (**I know this really looks like a scam email and yes you have to be careful but in this case it is the real deal coz remember #1 rule of the game no real money**):
- You tap on the claim funds button in the email.
- This takes you to the LOBSTR.co website with prompts to create a LOBSTR account, by entering a username which can be your email address.
- For passwords these days using your device generated passwords can be the easiest solution.
- You are then prompted to verify your email. You will receive an email like below to the email you used to set up the account:
- tap on the “verify email” button
- this will take you back to LOBSTR.co in your browser where you will be asked to “create wallet” - go ahead.
- Then you will be asked to save your 12 word recovery phrase. You can take a photo of it. As the wallet



will be used in the game and therefore should not be used to store real money, if you lose/forget your password it is not so critical. Because just like monopoly you can just start a new game set up a new wallet etc. However if your game is going well and you have developed a flourishing economic commons with a diverse commitment pool of goods and services then as long as you have your 12 word recovery phrase you can always recover the wallet.

- When the pop ups appear asking if you want to buy crypto etc. just click on “not now” and “don’t show again”. This should get rid of the advertising, **remember this is a game there is no real or pretend money involved.**
- Claim your incoming transfer of seed XLM to fund trust lines with DCVs you want to trade with and also for inviting new players.
- Now go to the App Store and download LOBSTR stellar lumens wallet.
- After you click install wallet in the App Store a notification ask you to install with your account already set up (this is because you have just set up your account on the LOBSTR website)
- Open the LOBSTR wallet app once it is installed and “sign in”. Enter your username which is usually the email address you registered with and the password that you set earlier.
- Don’t allow notifications
- LOBSTR will then help you set up a federated address for your stellar account. The federated address consists of alias*lobstr.co. This address is like your email address people can use it to send you DCVs.

Now that you have your LOBSTR wallet set up with your account’s federated address, you can start designing your Digital Commitment Voucher (DCV) and adding trust lines to other players DCVs so that you can transact with those DCVs.

2 b Custodial Players and Autonomous Non-Custodial Players

There are 3 types of players in the game:

- 1) Custodial Players just participate in curated pools managed by Custodians. These players just use the digital wallet to send and receive DCV's and view what DCV's they have available in their account. These players do not manage the 56 byte keys to their account and give these over to the commitment pool custodian to manage. These players don't use the Stellar Laboratory and instead request the custodian to make changes to trust lines etc. Even though LOBSTR is a non-custodial wallet it allows you to operate it just using the account password stored on your device.
- 2) Autonomous Non-Custodial Players manage their own keys and use the Stellar Laboratory to issue their DCVs and manage their trust lines. These players can participate much more organically as they are in control of all functions.
- 3) Commitment Pool Custodians are Autonomous Non-Custodial Players who manage their own keys and use the stellar laboratory and play the administrative role of managing the Custodial Players keys etc. in the pools that they are custodians of.

The information from here on in the document is for the Autonomous Non-Custodial Players i.e. those who want to be autonomous and not rely on other players to manage their keys and stellar laboratory operations. Any Autonomous Non-Custodial Player can become a Custodian as long as they are willing and capable to administer the keys and execute the stellar laboratory operations for other players. Having a commitment pool custodian does introduce an element of centralisation into the game.

The next sections of this document up to section 5 along with the appendixes contain all the relevant information for someone to operate as an Autonomous Non-Custodial Player. Section 5 explores various scenarios of possible custodial commitment pools.

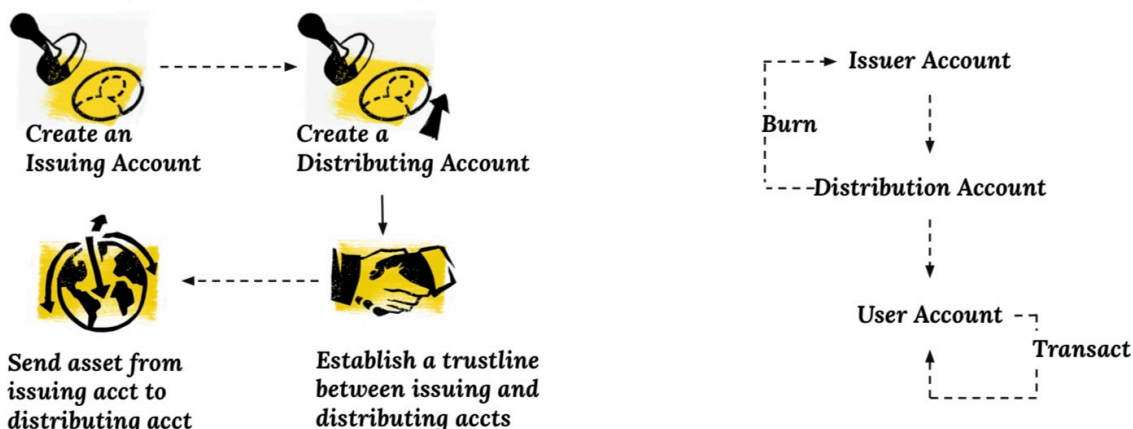
2 c Creating your unique Digital Commitment Voucher (DCV)

Creating a Digital Commitment Voucher is significantly more complicated than creating an account; downloading the digital wallet; and sending and receiving DCVs. This is an example of how someone could redeem one of my DCV 30 minute attention tokens. In the 30 minutes I could help them design and issue their unique DCV.

For the purposes of keeping the game moving, I won't go too deeply into the design of DCVs just to say that the Stellar open source decentralised network provides quite a user friendly high degree of native functionality in designing these assets through their Stellar laboratory interface. The intention here is to give a brief overview of the logic and native functionality that the stellar network provides for designing and creating DCVs.

To create assets using stellar involves 5 simple steps using the Stellar laboratory interface:

- 1) Creating an issuing account (with associated public and private keys)
- 2) Creating a distribution account (with associated public and private keys)
- 3) Fund issuing and distribution accounts with native xlm to cover network fees.
- 4) Establishing a trust line between the distributing account and the issuing account
- 5) Issuing the asset from the issuing account to the distribution account



This means the entity that controls the issuing account controls the asset/DCV. If the DCV is not made immutable (cannot be changed) then the issuing account can continue issuing more and more DCVs to the distribution account. Think of the issuing account like the printing press for your Digital Commitment Vouchers. If you ever want to take some of your DCVs out of circulation then you do this by sending them from the DCV distribution account back to the DCV issuing account, this is called burning them.

There are 4 important sets of decisions you need to make when creating your DCV:

- 1) Asset controls
- 2) How many you are going to create.
- 3) Asset nomenclature
- 4) Asset information

2 c 1 Asset Control: There are 4 controls or flags, native to stellar's core technology, that can be applied to your asset, please refer to this [white paper](#) for more detail.

- 1) Limiting access to an asset - Flag Name: AUTHORIZATION_REQUIRED
- 2) Locking the asset's configuration flags - Flag Name: AUTHORIZATION_IMMUTABLE
- 3) Revoking access to an asset - Flag Name: AUTHORIZATION_REVOCABLE
- 4) Clawing back an asset - Flag Name: AUTHORIZATION_CLAWBACK_ENABLED

I recommend in the early days to make the DCV immutable/locked that way everyone knows how many are in circulation, and it keeps things simple. As commitment pools develop and become more sophisticated they could experiment with more sophisticated DCV design, incorporating some of the above controls. I am going to make my DCV immutable/locked.

2 c 2 How many to create?: I am going to put this at 44 for me, that way if people try and redeem all of my DCVs at once I won't feel overwhelmed and will be able to fulfil all of my outstanding commitments within a week. It is important that this is limited I think ideally to the equivalent of 30 hours of service at the outset of the game. This puts it into alignment with the Indigenous mutual service models. Then as pools become more confident and daring they can vote to develop more sophisticated DCV's and associated financial instruments such as liquidity pools for popular high volume pairs of DCVs and associated automated market makers to improve liquidity. All of these functions are available native as part of the stellar core technology and do not require any smart contracts or sophisticated code.

2 c 3 Asset Nomenclature: there are 2 formats for creating a name for the asset:

- 1) Alphanumeric 4-character maximum: Any characters from the set [a-z][A-Z][0-9] are allowed. The code can be shorter than 4 characters, but the trailing characters must all be empty.
- 2) Alphanumeric 12-character maximum: Any characters from the set [a-z][A-Z][0-9] are allowed. The code can be any number of characters from 5 to 12, but the trailing characters must all be empty.

The name of the asset should allow people to easily identify it and remember it is case sensitive. Commitment pools could develop their own standards for naming assets to make them more identifiable and understandable. I have named my DCV "44scoot30m" - The name uses the 12 character maximum format and follows a simple nomenclature standard that I propose particularly for service based DCVs:

- 1) The first 4 characters are for putting the number of how many of that DCV have been created. In the case of my DCV that was 44. For the first instance of the game it is important the DCVs are capped at a number that the issuer can comfortably fulfil within a week if all the DCVs were to be redeemed at once.
- 2) The next 5 characters refer to the issuer name, so it easy to see who has issued the DCV if you are familiar with it, if it was the first time you were encountering the asset then the 5 characters would be the reference you would use to find out more information about the issuer. I have used the first part of my LOBSTR player account federated address "scoot" I think this could be a good standard to follow at least initially then the DCV is linked to the players federated account with the same ID.
- 3) The last 3 characters are for the unit of account and relative weighting of the DCV. I have used m for minutes or time as the unit of account and the relative weight of the DCV is 30 i.e. 30 minutes of Scoot's time. In think this will work for the game as to start off with it is just people's time that is required to

develop it. When the need for DCV's that represent goods arises, there could be an appropriate standard unit of account and vectorised weighting system developed.

2 c 4 Asset Information

You can link your asset to a webpage by using a stellar.toml file. This is a good way to provide more information about your DCV especially as the commitment pool gets bigger. The advantage of this is that you can click on the DCV in your wallet and if the stellar.toml file associated with that DCV is active in a webpage you will be taken to the webpage directly. For the time being we will leave "**creating the website information linked to the asset**" for a latter iteration of the game as it introduces another level of complexity.

I am going to use the domain **www.econcom.org** to embed the stellar.toml file for my DCV. This will contain the documentation for the Economic commons - a decentralised commitment sharing game. Along with other writings, so that anyone can go there and gather a significant amount of information about the nature of my attention.

2 c 5 Execution: 5 easy steps in the Lab

It is pertinent at this stage to talk a little bit about security and cryptographic technology, as the first 2 steps involve creating 2 accounts: a DCV issuing account and a DCV distribution account. This will make a total of 3 accounts that each player will be managing. The creation of accounts involves the generation of 56 byte encrypted key pairs, this means each account has two keys both of which are 56 characters long: the public key starts with G and that's the one you broadcast so that people can find the account and communicate with it; the other one starts with S for secret that is your secret key that is used to sign any transactions in the account. **Whoever has access to the secret key can control the account.** The LOBSTR wallet is configured in such a way that you do not have to deal with the keys, this is very user friendly.

Now that you are creating your own DCV it is time to take control of your keys. Considering this is a game and there is no real money and for my part there is very little exposure, I simply copy my keys into a document that is password protected and I store that document on my hard drive. That document contains the public and private key for each of the 3 accounts: 1) LOBSTR player account 2) DCV issuing account 3) DCV distribution account.

Having an issuing account and a distribution account enables several things:

- 1) You can lock the issuing account, in such a way that anyone can view the account if they know the public key and see that it is locked. This gives everyone assurance that the DCV is immutable and only the amount created will be issued into circulation, no more.
- 2) Having a separate distribution account allows the fixed number of DCVs that were created by the issuing account to be sent into circulation in tranches.

2 c 5 1 Create DCV - see Appendix A: Create DCV with detailed steps and stellar lab screenshots.

3 Playing the Game: running the GrE Commitment Pooling Protocol on top of the Stellar Consensus Protocol

"As we look at the indigenous mutual service practices of Rotating Labour Associations (ROLA), there are several key functions that stand out. These functions have been formalized by GrE into what we call the Commitment Pool Protocol along with software reference implementations available at the end of this paper. With this protocol, one can create and manage a collection of commitments (formalized as vouchers). In the ROLA tradition, a group of neighbors express their commitments toward their mutual wellbeing. For example, one might promise the group a day's labor, another, 20 coconuts. The commitments are valued relative to one another, and then considered as a whole, which is analogous to 'pooling'. The ability to create relative value indices and also limit the maximum amount of any one commitment in the pool are crucial to maintain balance and de-risk individual failure to fulfill commitments. If anyone's commitments far overshadow the rest, then that system would be overexposed to the risk of that person's failure to fulfill their commitment." (Will Ruddick GrE "Commitment Pooling Protocol")

GrE are using a decentralised ledger ecosystem called Celo that uses a proof of stake consensus protocol to implement the Commitment Pooling Protocol, I am not very familiar with this ecosystem other than what I know about proof of stake secured ecosystems in general. This game is unique in that it explores an instance of running the Commitment Pooling Protocol on top of a decentralised ledger ecosystem called Stellar which uses a unique proof of agreement consensus mechanism called the Stellar Consensus Protocol.

This implementation is very simple from a technology perspective and leverages the 3 basic building blocks of the Stellar decentralised ecosystem: 1)Accounts, 2)Digital Commitment Vouchers (DCV, aka digital assets) and 3)Trust Lines. So far we have seen how to set up accounts and create DCVs. Accounts and DCVs are like the trees in a forest and trust lines which we will discuss now are like the mycelial fungal hyphae in the soil that connect the trees and allow for the optimal distribution of resources for the overall wellbeing of the entire forest. The Trust Lines are like the conduits through which nutrients flow from one organ to another like the bloodstream in our bodies. You could think of the accounts and DCVs like the loom of a weaving and the thread is the trust lines that hold it all together and create the patterns and textures. Utilising this technology facilitates replacing the need for any one currency (fiat or crypto) as the base medium of exchange (like the US dollar is used now) and instead creates a field or space of exchange with many conduits for a diverse range of DCVs to be exchanged peer to peer interchangeably utilising standardised sets of DCV nomenclature.

After having contemplated these consensus mechanisms quite a bit I have come to the conclusion that any incentive based consensus mechanism is perverse in its very nature. Proof of Stake systems involve incentivising the staking of money or cryptocurrency by returning a yield/interest on money staked, which just replicates the current capitalist imperialist system albeit in a decentralised way. At the crux of it lies the same perverse incentive that lies at the foundation of capitalism, that concept of interest. This by its very nature leads to the eventual monopolisation and centralisation of resources and power to a few nodes in the network at the expense of all the other nodes. Whereas the Stellar ecosystem does not provide any incentive to reach consensus other than the fact of consensus itself. The way Stellar reaches consensus is through a Federated Byzantine Agreement protocol called proof of agreement. This system solves the Byzantine General's problem with a Byzantine Fault Tolerant algorithm that is based on real world social contract (agreement) represented by flexible trust lines on the network i.e. if you agree with another node you extend a trust line to them, if you no longer trust their state of the ledger you can remove the trust line. This is achieved through a step wise or federated decision making process. A federated system refers to a collection of interconnected but autonomous systems or components that work together to achieve a common goal. These systems maintain their independence while sharing data and resources as needed. The elasticity or flexibility of the trust lines in the sense that they can be either extended or withdrawn is the way nodes or players are able to isolate faulty DCVs, where the issuer is no longer able to fulfil their commitments effectively, causing the game to fail. Once a poor performing player / node has been isolated they can be supported in various ways to re-earn the trust of their peer nodes / players before they can rejoin the game and participate fully in the commitment pool again. In this way the reliability of the DCV to be redeemed, reflected in the number of accounts with trust lines linked to it, is representative of the issuer's reputation within the commitment pool. So in this implementation its players reputation which is at stake not their money - remember there is no real or pretend money involved, just shared commitments. This is managed by the players through the agency of "Flexible Trust", that is an inherent attribute of the underlying decentralised ledger technology.

I am looking to recruit a team of Mine Craft enthusiasts to implement an instance of the Economic Commons: decentralised commitment sharing game as specified above utilising the Stellar Consensus Protocol and decentralised network to run the GrE Commitment Pooling Protocol Indigenous Mutual Service use case. The idea being that the economic commons game will serve as a coordination mechanism to produce a more creative and collaborative team Mine Craft world.

As is outlined above due to the alignment of both protocols and the inherent agency of "Flexible Trust", it is hypothesised that the implementation will, once started, develop organically into a virtuous cycle of trust and commitment that caters to the needs of the players in the pool and minimises waste and excess consumption, allowing the players to realise their collective objectives.

The intention is to incorporate self reporting into the documentation that each player is encouraged to contribute to. This will provide some data with which to access the success of the game in terms of the following broad areas:

- 1) Ease of use. Is it user friendly?
- 2) Entertainment. Was it fun or more of a chore?
- 3) Were your needs met individually?
- 4) Were the needs of your team met? and did you achieve your collective goals?
- 5) Was the system efficient and intuitive?

3 a Key functions of Commitment Pooling Protocol running native on Stellar

All the key functions of the Indigenous Mutual Service use case are easily configurable using the native functionality of the Stellar core technology, simply by using the [Stellar Laboratory](#) browser page to issue and control DCVs and trust lines between accounts and DCVs. A digital wallet can be used to access accounts, and send and receive DCVs to and from other accounts, we have chosen to use the non custodial wallet LOBSTR (there are other wallets available that can be operated on basic phones using keypad sms). The details of how to execute all of those functions have been outlined above and in the appendixes with detailed step by step instructions and screen shots. Following is a recap on how each of the GrE commitment pooling protocol functions are implemented:

3 a 1 Curation: selection / recruitment; limiter; Quoter relative weighted value (aka price)

It is the role of the pool custodian to facilitate the curation of the pool and oversee the above functions which are all key parts of the social contract that will form the basis of the pool. Helping facilitate decisions about who can join the game and what kind of commitment they are bringing. What are the credit limits for the various DCVs i.e. how many can be issued. What is the basic unit of account and what are the relative weightings of each DCV.

3 a 2 Aggregation / Issuing

This falls under the role of the pool custodian as well to issue the DCV into the players digital wallet. Although it must be noted that the single stated mission of the Stellar open network is to provide equal access to the financial system. What this means is that anyone can create their own DCV and there is nothing preventing players extending trust lines to that DCV if they choose to. So in this sense once the DCV is issued then anyone can establish a trust line with that DCV if they choose to.

It is important to note that a key part of the hypothesis being tested is that the inherent design of the stellar technology once implemented encourages the organic curation and aggregation of fluid decentralised pools of commitment with minimal assistance from pool custodians especially when the majority of players are autonomous, non-custodial players.

It is also important to note an important distinction between GrE concept of pooling commitments and the concept being developed here of sharing commitments. As I understand it GrE are using a virtual machine operated distributed application called Sarafu on the Celo decentralised ledger ecosystem and have developed a pooling mechanism where participants can submit their vouchers to the pool and then the pool operates as an exchange space. So that if I don't have bread vouchers but I need bread I can exchange one of my water vouchers for a bread voucher in the pool and then send the bread voucher I got from the pool to the baker to get my bread.

The intention with the mine craft experiment is to see if using the stellar technology it is possible to create an instance of successful resource coordination without having a separate pool of vouchers to serve as an exchange space. But rather all of the players and their associated DCVs will form a pool and as long as a standard DCV nomenclature is agreed on and followed and there is a high amount of trust lines between the various players accounts and each others DCVs then the DCVs should be able to be exchanged interchangeably directly peer to peer, without the need for a separate pool to serve as an exchange.

3 a 3 Peering

Trust lines are what enable the peering in stellar as soon as you extend a trust line to a DCV then you can receive that DCV into your wallet and send it to another player's wallet who also has a trust line extended to that DCV. The extent to which DCVs share trust lines with players determines the extent to which those DCVs are interchangeable.

3 a 4 Ledger Accounting

This is provided by the stellar decentralised blockchain ledger. Stellar's native crypto currency xlm is used simply to prevent spam attacks on the network and as a form of native demurrage where rent is paid for using system resources. 1 xlm is required to create an account 0.5 xlm are required to create a trustline and the fee for each transaction is a fraction of a penny 0.00001 xlm (1xlm = app USD\$0.1). To solve the state bloat problem a fundamental problem of blockchain, stellar have introduced a state archival protocol, which essentially involves associating a rent balance with every piece of state on the ledger. Once the rental fee is no longer being paid the data is deleted from the live ledger, the data can be restored from the state archival system if it is needed for a transaction, however the cost to restore is higher than the rental, it follows the principle of use it or lose it. These instances of native demurrage on stellar help prevent the hoarding of network resources and rather encourage their even distribution throughout the network ensuring a level playing field with equal access for everyone.

3 a 5 Proof of identity, authentication and permissions

In a curated pool these functions would again fall to the pool custodians, as they design and issue each DCV to cover off against the chance of the player defaulting or not being able to fulfill the level of commitment they have circulating in the pool.

In more organic pools this function can be achieved through associating a webpage with issuer information and guarantees linked to each DCV via the Stellar.toml file. Allowing players to verify who and what are behind and supporting each DCV, before they extend a trust line to it.

The pools could also grow organically with players onboarding people who they already know and trust in the real world, this again puts the real world social contract as the basis for security.

3 a 6 Stewardship and Governance

This could be facilitated by pool custodians and decentralised voting systems could be used, based on the simple principle of one player one vote.

3 a 7 Enforcement and Execution

The simple version of the system is theoretically immutable where the DCVs configuration flags are locked with agreed upon caps. It is only a game anyway so if something goes wrong you can just start over again, like you do with other games. But being serious because this is a serious game, **the central thesis that we are intending to validate with the mine craft experiment is that the flexibility or elasticity of the trust lines provided by the stellar network will serve as the mechanism for the decentralised curation, stewardship / governance and enforcement of the social contract of the pool.** Each player participates in this through how they vote with their trust. In this way the pool/team of players could behave like a murmuration of starlings, in the sense that the DCVs that have the highest level of trust with players across the pool will be the most liquid and those that have the lowest level of trust will be the least liquid and will naturally become isolated from the rest of the pool until they are able to regain the trust of other players. **The system is theoretically self regulating in this way through the agency of flexible trust.**

4 Conclusion

Once you start producing DCVs and then establishing trust lines with those DCVs and different player's accounts, the aggregation takes place and the pool grows, with each trusted DCV behaving like pooled credit. As each DCV has more trust lines established to it, it has more liquidity. Liquidity of a DCV and its pool size determined by the accounts that trust it are the same thing. If those accounts are connected to other DCVs and the DCVs share a standardised nomenclature with a common unit of account and relative weighting then those DCVs can be exchanged peer to peer in a relatively interchangeable way. This game is mission agnostic in the sense that it provides a pure coordination mechanism. The instance of the game with the Mine Craft team is designed to test if in the absence of any detailed mission or smart action plan, simply the act of creating DCVs i.e. articulating a commitment into a digital voucher, and establishing trust lines between multiple accounts and multiple DCVs, will spark what is needed to happen to meet any implicit objectives. Due to the inherent alignment of both protocols the implementation is relatively easy

and success in the coordination of resources is predicted if the basic steps and parameters outlined above are followed.

Starting in the first instance of the game by creating a generalised service DCV unit of account like time i.e. m for minute, will provide the necessary impetus to coordinate to create more elaborate DCVs that might involve goods, for example with a separate unit of account and vectorised relative weights documented in the nomenclature of the DCV. The interesting thing will be to see what if any clear missions, objectives and actual real world achievements come from playing the game. Even if at first it feels a bit aimless. Each DCV is effectively a unit of credit. If the amount of credit each issuer can issue is limited and is clearly manageable it reduces the risk of a DCV failing immensely. As pools increase in size - as DCVs and the trust lines between DCVs and accounts increases - the DCVs become more interchangeable and overall liquidity of the credit/commitment pool increases. This then increases the collective impact the pool can have when it is directed towards specific missions and objectives.

To conclude: credit and commitment are synonymous. The more committed you are the more credit you can offer. Everyone issues a comfortable amount of digital commitment vouchers as credit for their time / resources that they have committed. Then these digital commitment vouchers are exchanged interchangeably to call on peoples time / resources that they have committed.

A small amount of xlm (lumens) are required to play the game to cover the marginal fees. There is a treasury of xlm to cover all of these fees. If after reading this you are interested and capable of being a custodian for a commitment pool with some of the people from your trusted circle in the real world then please contact me at lovingearth@me.com and I will forward to you the LOBSTR invitation email with a seed amount of xlm to start your pool.

5 Mine Craft Enthusiasts use case

This use case with the mine craft enthusiasts will start as a centralised custodian operated pool and then with each iteration will become more decentralised as the players migrate from custodial to autonomous non custodial players as they become more experienced. This will enable the custodian to be able to monitor and report on how the curation, aggregation and peering of the pool develops, this along with the players self reporting about their needs being met will provide the basis for seeing if there is a strong correlation between the organic growth and development of the pool and the extent to which players needs are being met.

If the shared commitment pool organically develops a high degree of decentralisation, with minimal pool stewardship and no separate pool that operates as an exchange, it then provides an interesting example of the radical shared economy. This scenario provides an interesting test of the hypothesis that: **The agency of flexible trust can serve as a self regulating mechanism for a collection of interconnected cooperative nodes.** This is the same as David Mazeires' internet hypothesis for his stellar consensus protocol, where he says that the flexible trust between nodes on the network will empower the basic social contract that his "proof of agreement/trust" or "Federated Byzantine Agreement" algorithm uses to secure consensus about the state of the ledger across the network. The same logic that David has used at the core protocol level has also been used in this decentralised instance of the game. Where there is a strong group of autonomous non-custodial players that have developed a high level of trust between each other, there is a high degree of security for the success of the game. As a general principle the more decentralised the network / pool the more secure and stable it is, any concentration of resources into more centralised decision making exposes the system to higher degrees of failure. In a well decentralised network individual nodes can fail without significant impact to the broader network and no node becomes too big to the point where its failure could trigger contagion throughout the system. So in a fundamental way players in the game relate to one another like the nodes securing the network. Whilst the nodes share the common objective of immutable consensus on the state of the ledger, the players playing the game share the same objective of maximising cooperation of the collective resources of the pool.

5 a 1 Scenario 1

This is like the trainer wheels scenario where all of the DCVs and trust lines are configured collectively to have maximum liquidity for DCVs throughout the pool.

- Start with at least 3 players.

- The basic unit of account for DCVs will be time
- The amount of DCV's issued by each player will depend on how much time per week they can commit.
- DCV nomenclature will follow the standard time / service based alphanumeric 12 character, outlined above.
- Trust lines will be extended between each player and each DCV, this provides maximum liquidity for the pool.

This will enable us to explore how players exchange the DCVs and whether the game facilitates an improvement in coordination amongst the group.

Examples:

Following is an example of players doing tasks individually

A) Each player starts with 3 DCVs each

Player	DCV
A	3a
B	3b
C	3c

B) B pays A to do something

Player	DCV
A	3a
	1b
B	2b
C	3c

C) A pays C to do something

Player	DCV
A	3a
B	2b
C	3c
	1b

D) C pays B to do something

Player	DCV
A	3a
B	3b
C	3c

Following is an example of players doing a task collectively

A) Each player starts with 3 DCVs

Player	DCV
A	3a
B	3b
C	3c

B) A pays B & C to help with her collective harvest

Player	DCV
A	1a
B	3b
	1a
C	3c
	1a

C) B pays A & C to help with his collective harvest

Player	DCV
A	2a
B	2b
C	3c
	1a
	1b

D) C pays A & B to help with his collective harvest

Player	DCV
A	3a
B	3b
C	3c

Appendix A: Creating DCV in the lab detailed screen shots - see other PDF