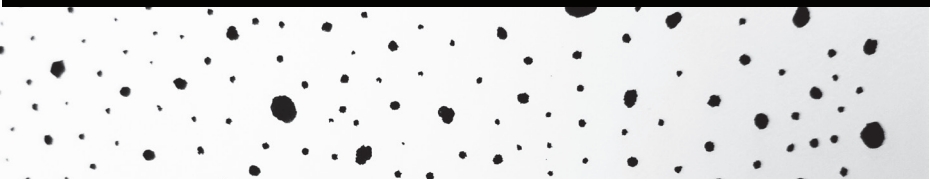# CoBox

cooperative cloud

DEAR FRIENDS
PEERS
SEEDERS
AND
LEECHERS

This past year we have been developing **CoBox, a peer-to-peer cloud** infrastructure to enable collectives, cooperatives, freelancers, artists and SMEs to securely back-up each others files.

This **2019/2020 end-of-year zine** is to give you an overview of the research and development work we have been doing in the background and invite your response and feedback on our work so far!

With love,

Magma Collective
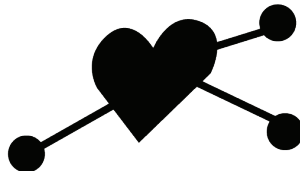
Many of us have been relying on corporate cloud infrastructures for our back-ups simply because we need the resilience and availability that these offer.

But in recent years, the trade-off of 'the cloud' is becoming apparent for society more broadly – from security breaches, to the use of our collective data for overt social, political and economic manipulation.

With the help of the Ledger funding, we have been working as part of a broader ecosystem of projects that seek to move from nebulous 'clouds' that are beyond our grasp, to 'mycelial' networks of grounded, interdependent and mutually beneficial relations.

With CoBox, your data will be encrypted and backed up amongst a trusted network of your peers.

And so, following the end of our first round of funding from the **European Ledger grant**, we are proud to announce our

CoBox 'Sprout' alpha release!

This release is 100% focused on testing, and so is not quite ready to depend on for day-to-day use.

Instead, we would love for your cooperation to help get the software stabilised sooner by helping us find where and how it breaks!

SOCIAL DEV

CoBox is a peer-to-peer back up system. But taking care of other people's stuff is not a small commitment. Not everyone feels confident enough to do so, and not everyone is trusting of their peers.

We conducted interviews and teamed up with Sophea Lerner to help author the needfinding report; have held workshops in collaboration with Adeola Enigbokan; and investigated needs further with the help of Kate Beecroft. This helped us develop and discuss the social aspects of becoming a peer.

- The reports from our workshops and research can be found **here**.

- We also collated a **Needfinding report** following in depth interviews with 16 small/medium cooperatives of different technological capacities.

- And **this** is the responses from a more general survey we conducted about people's backup needs.

We learned a lot from the coops and collectives that took part. Thank you!

These learnings are feeding our technical architecture and sustainability models.

BACKBONE OF TRUST

The question of trust, confidence and capacity has informed our decision for CoBox to be a **'federated' network**. We aim to establish a peer-to-peer backbone of supernodes that will ensure uptime and the maintenance of the network, consisting of likeminded technology cooperatives who are interested in offering data support and backup services to others in the network. Our collective, **Magma**, will serve the CoBox network as an initiator node, guaranteeing initial uptime and supporting other nodes.

OFFLINE / LOCAL FIRST

It also means that we emphasise offline and local first, as we have found that beyond Europe, many of our collaborators struggle with network-outages - a situation that is likely to affect more and more people as the climate becomes increasingly unstable.

AGREEMENTS

Backing up each others files requires clear agreements between parties, and ways of shaping and reaching these agreements in meaningful ways. This is a work in progress. We will continue to refine the development of the social aspects of CoBox, as well as legal and will be running more workshops later this year.

Do **get in touch** if you want to be part of a more structured build-and-test workshop with us!

TECHNICAL DEV

We are proud to announce **CoBox 'sprout' release**!
- If you are a developer start with the **mono-repo**.
- Looking for the main app? Check out **CoBox server**.
- Looking for the seeder app? check out **CoBox seeder**.
- These apps are exposed by a VueJS UI, **CoBox UI**.

We've used the **Dat** modular peer-to-peer technology stack to build fully encrypted 'private folders' that synchronise across multiple devices – documented **here in our wiki**. A 'private folder' is a virtual place where you and your group can securely access your files. It exists across a number of peers, but only the people with the right keys to can access the space. Use the **App** if you simply want to store your files. You can also join the network by running a **Seeder**, to host the encrypted backups of other peoples data for them. Contributing to the cooperative cloud with the **click of a few buttons**.

COBOX APP

CoBox App is how most people will navigate CoBox. The server is a core component of the CoBox App. It exposes a VueJS UI, an ExpressJS JSON API, and a Yargs CLI for interacting with CoBox 'folders', 'backups' and 'seeders'. Similar to Dropbox this opens a folder on your own computer. The big difference with Dropbox is that you can then provide a code to peers running seeders and they will

host an encrypted copy of your data. You will know who has your back-ups, and how many there are. Only you have the decryption keys. The more peers who are seeding your encrypted data, the more resilient your files are. In future we envision a network of supernodes offering backup as a service.

COBOX SEEDER

CoBox 'seeders' make sure files are online and available, and form the building blocks for the cooperative cloud. These are 'always on' replicators - replicating files across spaces, without being able to read them.

A seeder exposes an ExpressJS HTTP JSON API, as well as processing remote commands from a registered and authenticated CoBox server instance over the Hyperswarm DHT using the Hypercore Protocol. At the moment, you'll need to be able to install the seeder on a server or raspberry pi, following our 5 min install instructions. You can then control it directly through the CLI or through the CoBox App. The seeder will allow you to host encrypted backups of CoBox spaces - create a swarm of your own devices or as part of an agreement with friends or organisations.

In the future, the CoBox Seeder will additionally be wrapped within a Hub which we envision will be operated by other supernodes who can thereby offer services such as 'back-up-as-a-service' and so on. Check out our **glossary section** for an overview of our concepts, what are

'seeders', servers and apps and how CoBox backups work...
If you want us to start seeding you data, just send us you
folder address to info@magmacollective.org we we'll seed
it for you!

Finally, we have been prototyping a physical hardware
device, working with Mario from fablab, Chemnitz. It will
be plug-and-play to make it trival to contribute back up
services to the co-operative cloud - you won't need to be a
sys-admin.

OPEN SOURCE/FOSS PHILOSOPHY

CoBox is part of the Free and Open Source Software
movement, allowing people to freely contribute to and
make use of CoBox technologies regardless of the service
fees - while also fully supporting organisations who are
happy to pay for technical support.

Open source is industry standard for publicly trusted
cryptography projects. Audits allow for vulnerability checks
which all add to the security of the service - rather than the
"just trust us" model of closed source solutions. All CoBox
code is published under the **AGPL-3.0-or-later** license.

ECONOMIC DEV

One of the main problems of cloud infrastructures are their business models that rely on centralisation, capture and the commercial exploitation of data.

In CoBox, we are putting effort into developing other approaches to economic sustainability for us and the network as it grows.

We, as a team, come from the distinct histories and cultures of peer-to-peer tech and the cooperative movement. We have found that the idea of 'Infrastructural Mutualism' coined by Lana Swartz, bridges these two worlds, emphasising the ability for people to run and sustain their own mutually beneficial infrastructures.

In short, our focus is on the economic well-being of the network overall.

OPEN SOURCE BUSINESS MODEL

We are therefore developing an 'open source businessmodel' that other technology cooperatives can adopt when they join the network. For example selling CoBox hardware devices, offering 'supernode' backup services, 'discoverability' services and, in the future, 'data officer' services for individuals, small groups and SMEs that need help with how best to manage their data.

By this we mean that as we develop and begin to offer CoBox related products and services, these, including their costings and pricing, will all be open source. The hope is that other technology cooperatives wil thereby be able to also build on and offer CoBox products and services.

This is a work in progress and we are bridging many worlds: between the crypto space, the cooperative sector, traditional start-up culture and the institutional and regulatory environments of GDPR.

We therefore teamed up with Kate Beecroft from **GreaterThan** who has written our

      CoBox **business report**

- our first step towards articulating CoBox network sustainability overall.

Please do have a look and give us feedback! It was the cloud businessmodel was the game-changer that centralised network value and control, and will have to be addressed head on for a decentralised future to become a reality.

ECONOMIC DISINTERMEDIATION

We decided not to issue a token as part of CoBox. For three reasons:
      1. Adding tokens and economic modeling to
      network architectures often increases the complexity

and intermediation taking place through that network rather than reducing it. We emphasise demonetisation and the possibility for people to engage in connections that are not primarily framed as economic.

2. We also humbly refuse the idea of solving all human practical, political and economic matters in one network architecture. Instead, we give a nod to the excellent work that our friends in mutual credit, cryptoeconomic, complementary currency and experimental economic communities are doing. In the spirit of interdependence, we look forward to seeing how these might interface with CoBox.

3. Furthermore, CoBox is not a 'trustless', 'permissionless' network and is therefore not dependent on tokens and incentives for our security model. We are largely trust-based, building on many offline relations and processes and implement an incremental, federated structure.

We look forward to discussing and testing these ideas with other technology coops. A warm thank you goes especially to the **CoTech network** in the UK for all the input! We are proud to be part of this excellent network of technology providers.

NEXT STEPS

Our next steps will be to test what we have developed so far in 3-6 workshops. Do get in touch if you are interested to test and build with us!

In these, we hope to already begin to extend the network backbone with those of you interested in joining as peers or supernodes.

From there, we will be prioritising **new functionality, UI and the relationship, organisational and legal innovation**...

But first, we will be taking a needed summer break, but will be back in the autumn hoping to have received some positive funding news by then.

In the meantime, we are on the search for:

- **Money.** Do get in touch if you spot a good funding option or want to partner with us.
- **People and organisations for workshops.** Do get in touch, or put us in touch with likeminded and interested freelancers or cooperatives that might need something like CoBox.
- **Partners** to continue developing the project.
- **To integrate.** Get in touch if you are working on an application or device and want to integrate with CoBox.

GET INVOLVED

Just to re-emphasise, this release is for gathering testing experiences, feedback and bug reports from people. With this in mind, it's not yet advised to use for day to day use as it is in alpha stage so you can expect us to have to make changes that might break this version...

- If you are a developer and want to contribute, have a look at our **README repo** and email us **info@cobox.cloud**.
- If you are a freelancer, collective, coop or SME and would like to be informed when a stable release is ready, email us **info@cobox.cloud**.
- If you are more interested to learn how CoBox works see our docs at **docs.cobox.cloud**.
- If you'd like to read more about the history of the project, research and milestones and other general information please check our **wiki**.
- If you want more casual updates, we are on **Twitter**
- If you are enjoying CoBox you might consider writing in our **Guestbook**.

CoBox End-of-Year Zine

August, 2020

info@magmacollective.org

cobox.cloud
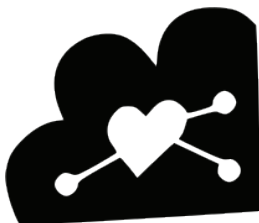
With love,

Magma Collective

Links to all our outputs this year can be found **here**