

# **Liberdus**

It's time you govern your own money.

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# Introduction

Liberdus is a payment network and the first application to be built with the Shardus distributed ledger framework. We are building this payment network to enable people to govern their own money; and as a result, participate in a more fair and sustainable economy.

For millennia, money has existed in some form or another. Money has made it easy for individuals, governments, and businesses to transact with one another. Over time, our money has evolved and gone through many different forms: metal, paper, and now even digital. During the same timeframe in the western world, our governments have evolved from feudal, totalitarian states, to more and more democratic forms of government. However, our money and its rules remain relatively un-democratic. But...

We believe it can be different. The Liberdus team believes a more democratic form of money can be achieved with the use of distributed ledger technologies and an on-chain governance system – so that every decision about the rules of the money is made by the people who use it. This is what the Liberdus project aims to achieve.

# Purpose

We know that most money systems are unfair. Even within democratic countries, most of our economies favor the rule of few with arbitrary power over the sovereignty of the people who make up the economy. This isn't necessary because of some conspiracy; it's simply always been more efficient to do things in this type of centralized manner.

However, with the advent of blockchain and cryptocurrencies, we now know that it does not have to be this way. We can make money systems more democratic, down to the rules and parameters that control them.

We as the LiberDus team have set out to **create a payment network that enables coin holders to govern their own money** as a way to give the power back to the people as well as promote a sustainable and adaptable payment network. We want LiberDus to be very community-centric, as we believe this is the key to making a successful payment network.

Giving people the power to govern their own money not only empowers them to participate in making decisions about the rules of the economy, but also makes sure that the rules of the economy reflect the most relevant information about the participants in the economy. We hope that this makes LiberDus a more sustainable and future-proof currency.

The LiberDus team looks forward to a future where many things in the world are more truly democratic, and we think that LiberDus is an important step in that development.

# Features

While designing LiberDus, there were a few key features that we thought were important to accomplish our goal of creating a coin that is easy to use, secure, and most of all, allowed users to **directly govern their own money**. Here is a high-level list of features that LiberDus provides:

- On-chain governance (through voting system)
- Configurable network economic parameters
- Development fund to enhance and promote the project
- Linear network scalability
- Near-instant transaction finality
- Secure, quantum-resistant cryptography

All of these features listed above help contribute to making LiberDus a coin that is run by its users rather than the developers or network node operators. Below we will go more in-depth about each feature.

## Governance

The defining philosophy of LiberDus is to allow users to govern their own money. This would not be possible, or at least not technically feasible or provably fair, without the implementation of an on-chain governance system.

Governance in the LiberDus payment network is facilitated through an **issue proposal and voting system**. A coin holder can submit a proposal for a change to the network and other coin holders will be able to vote on the issue with their coins. This will help to limit the amount of spam proposals in the network and eliminate the problem of voting with fake accounts that you would find in a system where voting is tied to your account and users are given one vote per account.

**Submitting a proposal will require a fee** from the submitter based on how many choices are proposed for the given issue and votes cast on issues are weighted based on how many coins a coin holder submits with their vote. Coins used for proposing issues and voting on issues **are burned and permanently lost**. This ensures that there is a serious commitment to the choice you are making when proposing or voting on an issue.

The main use cases for the Liberdus governance system are:

1. Voting on changes to network economic parameters
2. Voting on development fund expenditures

## Changing Network Economic Parameters

Although the Liberdus network will come with certain features upon launch, the coin holders of the network may feel that certain features should be changed over time. Because of this, the network software is designed to allow users to submit on-chain transactions to propose a change to certain network economic parameters without needing developers to make such adjustments. Users will be able to adjust parameters including:

- The daily amount of coins paid to node operators
- The staking amount required to operate a node
- Transaction fees
- The daily account maintenance fee
- The daily amount added to the development fund

For more information about each of these parameters and what they are, see the Economics and Economic Parameters section below.

When creating a change proposal, the submitter will include the new values for each of the economic parameters. The submitter can propose multiple choices for the new values, and the proposal will create a new address for each choice that other **users can submit coins to in order to cast their vote** during a prespecified time frame. The choice address that has more coins on it than the next highest choice address by a certain margin wins and the parameters specified by that choice address are automatically changed by each node in the network. Once coins are submitted to an address, they are lost even if the proposal does not go through.

The margin by which a choice address must win by for a proposal to go through is based on the amount of choices given in the proposal.

The formula to calculate the margin as a percentage is:

$$100 / (2 * (\text{number of choices} + 1))$$

If no choice wins by the specified margin, then the given proposal does not go through. This makes it much more expensive for a few colluding actors to pass a proposal that others voted against and overall more fair for the entire network.

## Development Fund Expenditures

After the initial development of LiberDus is complete, future development will be funded by a network development fund. The development fund will enable the project to be maintained and expanded without the need for external funding. This ensures that as long as there are people willing to continue to maintain the software and/or seed related projects, there will be no need for a central organization to sponsor these activities.

The development fund proposal will function as such:

1. A **proposal** is made to fund an activity that adds value for token holders (i.e. software maintenance, a spin-off project, etc.) A proposal must describe the type of activity and total expenditure required, either as a fixed amount or daily amount with a fixed number of days.
2. Coin holders will **vote** to either approve or reject a proposal.
3. After a prespecified time, the votes are counted and if a proposal has **15% more coins** at the approve address than the reject address, **the proposal passes; otherwise it fails.**
4. Upon passing, the amount of coins described in the proposal will be **dispersed**, either as a lump sum or daily, from the development fund **to the specified address(es).**

This process aims to let the coin holders of the network decide which projects they should sponsor as a whole and should ensure that only projects that the majority of coin holders believe will add value to the network will be funded by the network. See more information about planned spinoff projects and a more detailed explanation of the development fund in the Development and Maintenance section.

## Economics and Economic Parameters

The economics of LiberDus are another key distinguishing feature of the payment network. There are a few rules about the **creation, destruction, and staking of coins** that keep the economy both healthy and fair. We will now discuss the rules associated with each of these proposed mechanics.

## Coin Creation

### Payment to Nodes

Money creation is an important part of any healthy economy. In the Liberbus network, payment for service to node operators serves as the starting point of new money in the economy. **Node operators are issued coins daily for participating in the network** and do not have to compete for their compensation. This is possible without inflating the economy too much as the number of nodes in the network is automatically scaled to support just the capacity needed for the current level of traffic along with sufficient data redundancy.

This mechanic is regulated by the Shardus framework that Liberbus is built on. For more information about this mechanic, see the [Shardus project](#).

### One-time Creation Event

As a way to seed the network and provide an incentive to those who contributed to the Shardus project and received Shardus tokens (ULT), coins on the Liberbus network will be **claimable at a 1:1 ratio to those who hold ULT**. The claims will be based on a snapshot of the ULT ERC-20 token contract on the Ethereum network at a point shortly before the launch of the Liberbus main network.

Token holders will submit a transaction proving their ownership of a token-holding address on the Ethereum network and will receive an amount of coins equal to their ULT holdings at the time of the snapshot. This will serve two-fold, as it functions as an incentive to contributors and also gives the network a starting user base in order to promote adoption of the coin.

Another similar snapshot and claim event will happen again 10 years after the initial event, this time at a rate of 10 ULT to 1 Liberbus Coin. We hope that this will serve both as a further incentive to Shardus token holders as well as a stimulus to the Liberbus economy.

For more information about ULT and Liberbus, see the Project Funding and Adoption section.

### Coin Destruction

Without a coin destruction mechanic, the economy of Liberbus would inflate infinitely as long as coins continue to be created. For this reason, we have designed a few coin



destruction mechanics that will be parameterized to keep the economy healthy and more stable.

### **Transaction Fees**

As many payment networks have, Liberdus will have a transaction fee to submit transactions to the network for processing. The transaction fee submitted will be **burned off**, thus contracting the money supply and acting as a small money sink. The network will also allow for transaction fees to be disabled if desired.

### **Daily Account Maintenance Fees**

Somewhat unique in regard to cryptocurrencies but not so foreign in the banking world, Liberdus will have an account maintenance fee parameter. Every day, a very small fee will be deducted from each user's account.

This fee will be burned off, and essentially act as a deflationary mechanic, similar to taxes. Because all users will have this fee deducted at the same rate, no one user really loses value in the system, but prices are able to remain relatively stable. This fee could be set to zero if the community chooses to do so. Setting this to a small fee incentivises users to consolidate their accounts and not have many accounts with small balances.

### **Inactive Accounts**

Accounts inactive for longer than a specified period of time (5 years is recommended here) will be considered lost and their coins will be burned off. This ensures that the reported money supply matches the actual money supply circulating in the economy. This parameter could also be set to zero so that accounts can remain inactive forever without fear of losing their balance.

### **Proposals and Voting**

Because proposing and voting on economic parameter and development fund expenditure requests requires a user to submit a fee with their transaction, this mechanic also functions as a deflationary mechanic. Fees submitted with proposals and votes are burned off, even if the proposal does not go through.

For more info about the voting system, refer to the Governance section above.

## Misbehaving Node Penalty

If a node is judged to be misbehaving by his peers, a penalty will be deducted from the node operator's staked funds and permanently burned off. We will likely discuss the process of this judgement in a later paper.

## Staking

Node operators will be required to stake a significant amount of funds in order to participate in the network. This mechanic ensures that nodes can be penalized upon misbehavior as judged by their peers and holds their operators financially accountable for their actions in the network.

## Scalability and Transaction Speed

Scalability and speed are two main issues we see in the near future when it comes to crypto-based payment networks. In order for Liberdus to be used in day-to-day transactions, we had to make sure that it would be scalable into the future, up to the point that billions of people could use it every day.

Liberdus will be using the Shardus framework as its backbone, which provides the ability for the network to **linearly scale** in terms of transactions-per-second (TPS) and also provides **near-instant finality** of transactions by getting rid of the grouping of transactions into blocks.

For more information about Shardus, see the [Shardus website](#).

## Security

Along with speed, we knew security would be important. With quantum computing becoming more of a threat to our current widespread cryptography schemes every day, Liberdus aims to be quantum resistant in order to protect the network from quantum computing attacks. Liberdus will use the quantum-resistant version of Shardus, along with 512-bit hashes and a quantum-resistant signature scheme. These two additions alone will make sure that it will be a long time before Liberdus would ever feel remotely threatened by quantum computing attacks.

## Interoperability

We do not believe Liberdus will exist alone in a vacuum in the world of cryptocurrencies. For that reason, Liberdus will support systems for off-chain transactions, such as time-locked tab accounts, systems for cross-chain transactions, such as time-locked

hash accounts, and systems such as Cosmos and Polkadot for other cross-chain operations.

We want the Liberdus community to be able to interact with the network in a variety of different ways, and we think out-of-the-box interoperability with other networks and layered solutions is the way to encourage and support that.

## **Completion**

We believe in completion. To make sure that the feature set of Liberdus does not grow uncontrollably, we hope to define the possible features the Liberdus community will be able to choose from. These feature choices will be embedded in the software as network parameters, and any desired changes to the network should be able to be carried out via a parameter proposal.

This means that developers will play a much smaller role in the future of Liberdus after the main net release, and the coin holders will really hold the power to make network changes. Should the network ever call for additional features, the network will be able to propose an allocation of development funds to fund the development of the features. Other than bug fixes, we hope that changes to the software will be as few as possible shortly after release.

## **Funding and Adoption**

Like any major project, development of the Liberbus project requires funding. However, unlike many projects in the “crypto space” right now, Liberbus is not doing any type of token sale of any kind. Instead, Liberbus will be using the Shardus token (ULT) contract on Ethereum to function as a means of both funding and adoption.

### **Funding**

Because the Shardus project considers Liberbus to be a vital project for showcasing functionality of the backbone it provides, the Shardus project is providing its ULT tokens as an incentive for the initial development of the Liberbus software. In return, once Liberbus is up and running, any further maintenance of Shardus will be funded by the Liberbus maintenance fund.

After launch of the Liberbus main net, ULT token holders will be able to claim Liberbus coins at a 1:1 ratio. For more information about the creation event, see the Economics and Economic Parameters section above.

### **Adoption**

For any new payment network, gaining a critical mass of users and getting to the desired level of health required to sustain the network is always a challenge. Luckily, the Shardus token provides a way to seed users to the public networks that use the Shardus software with the Shardus ERC-20 token (ULT).

Shardus requires that public projects using Shardus give a small percentage of their coins to holders of the Shardus token. This gives these projects an initial base of users and also gives token holders incentive for supporting the development of Shardus. Liberbus will be following suit with this, and as a result expects to see an increase in early adoption over releasing the network and then expecting others to begin using the network when no one yet has coins.

## **Development, Maintenance, and Future Projects**

One of the major features of Liberbus is its sustainability facilitated by a built-in development fund and the ability for the network to decide what it should fund via the on-chain governance system. Without this feature, it would be very hard to say that Liberbus is truly giving the power of the network completely to its users.

## **Initial Development**

As mentioned above in the funding section, initial development will be supported by the Shardus project and the Shardus ERC-20 token (ULT). Developers will work in a closed source environment until the initial release of the main network of LiberDus. Afterward, future development will be supported by the development fund and the project will be open source.

## **Development Fund**

After launch of the main net, all future activities will be funded internally via the development fund. Coins will accumulate daily in the development fund and can be requested by community members and developers via a proposal. The proposal will specify the amount of coins needed for the entire proposal, either as a lump sum or a daily amount for a specified number of days.

The community will then be able to propose and vote on projects, be it maintenance, new features, or even new spin-off projects; as long as the network agrees that the project is valuable to the community, they can approve any projects they wish. This is the beauty of self-governance.

## **Spin-offs**

As the network develops, the LiberDus team hopes that the LiberDus community will continue to fund other projects that line up with our ideology of bringing power back to the people and making the world more democratic. As such, we will be allowing the community to use development funds in order to fund such spin-off projects.

A few projects that we have already planned on funding with the development fund are GETCoin (a stable coin with built in universal basic income) and Globalville (a decentralized identity application), which is needed to ensure fair distribution of GETCoin. Another project in planning is ShardOS, a smart-contract platform developed on Shardus. These applications will be developed with the requirement that LiberDus coin holders will also receive coins on these platforms, thus giving back to the LiberDus community for funding the projects.

## Conclusion

We hope that after reading this paper, you understand the purpose and goals of the Liberdus project. If you have any questions regarding anything you read, feel free to reach out to us on our [subreddit](#). Below are a few links that you may find helpful for learning more about the Liberdus project. We hope that you will join the Liberdus community and start governing your own money soon.

## Important Links

- [Liberdus website](#)
- [r/Liberdus subreddit](#)
- [Shardus website](#)
- [Shardus token \(ULT\) on Etherscan](#)