



Cortex White Paper

The Ultimate Tool for Creating, Collaborating and Publishing on Web3

1. Abstract:

1.1. Cortex is a note-taking and collaboration application that brings a whole new power to your notes, ideas and decentralized sharing. There's a number of unique features and new contexts that set Cortex apart. First, Cortex is a digital notebook and a web3 browser that is also a crypto wallet. Each note or page has a globally unique and provable identity from a keypair and is also referenced by human-readable links. This means notes have a home in the current web and can interact in new ways on Web3 through the keys. Essentially, the key derivation in the wallet builds new information into the addresses. This new information can enable a note to be private, public or privately shared within a group. Cortex can cross the chasm where it is both a private tool while each note can still have a structure in a global social network. Because each note has a flexible back end behind the keys, security is built in at the root level while where the data lives with great flexibility as to where the data is stored. Information in each note lives in an encrypted form you can choose: stored locally, in the cloud, on IPFS or elsewhere. The key structure also allows the Cortex app to only display the notes on the client side. Neither the app, the company nor any third party has access to them unless you publish them. In addition, Each note is time-stamped with versioning and can also be forked, creating new ways to collaborate and generate value and curate the best information. Finally, notes can even hold NFTs or can be used to create NFTs or other tokens. Because crypto is built in at a root level, Cortex opens up endless new use cases for a web with crypto in its core. Commerce can happen around any content or data created, all built-in. With these features, Cortex can become the personal knowledge management and communication system for almost any use while creating demand for endless new crypto use cases.

2. The Big Idea: A Web with Crypto Built-In:

2.1. Despite massive gains and over \$1 trillion in crypto market cap, the benefits of crypto have not gone fully mainstream. We believe one of the major reasons for the lack of adoption is that crypto is not meaningfully integrated into the current web, it happens on top. To become fully integrated, we need to provide new levels of context where crypto is built-into the basic addressing structure. Easy-to-use and easy-to-code wallets with extended data features can provide a new level of interaction where crypto use cases are enabled on any site. Cortex, built on the YouBase Distributed Data Protocol (YDDP), provides data wallets that make interactions simple for a wider variety of users.

- 2.2.** Cortex is not just a note-taking application, it's a browser, a site publishing and messaging application for a crypto web where all data, notes and content have a provable owner and a provable history. With a trusted data framework we'll have improved search capability for accurate and authentic information and provable self-sovereign identities. To provide data ownership and global uniqueness at the domain level, Cortex will use Butterfly Protocol to provide an account URL in a decentralized manner where each domain is an NFT. Under these domain NFTs, Cortex manages the web pages and the directories as keys, keys that can both hold tokens and sets of keys can become tokens. Even the servers and hosts can be decentralized. Running this framework, a user will be able to create, publish, search and collaborate all in a decentralized web without intermediaries. Our site at <http://crtx.app.bfly.link> is live using this framework. The backend code, the YouBase Distributed Data Protocol (YDDP,) will be open source.

3. Features

- 3.1.** Some of the unique features of Cortex bring this decentralized framework together and make it powerful to use.
- 3.1.1.** Blockchain links, or "blinks." In Cortex, each note is identified by a human readable name that also defines a public/private keypair. So alice.human/recipes.lasagna could be Alice's lasagna recipe. "recipes.lasagna" resolves to a cryptographic key pair that can be used for creating a crypto address. Alice can then receive coins or tokens including NFTs if people like her recipe. Or Alice can create and send collectibles of her own related to the recipe. Because Alice signs with the private key, it's verifiably hers if she chooses to verify it.
- 3.1.2.** Coded in each link is a channel with specific access for your notes: public, private, shared, and group. Share the channel to share that cluster of notes.
- 3.1.3.** End-to-end encryption of private workspaces. Nobody owns your stuff but you. Share just the parts you want in the right context.
- 3.1.4.** Using a content-addressing system, the data in a note can "live" anywhere, IPFS, AWS, Cloud, locally, etc.. The human-readable address just serves as the lookup to the data.
- 3.1.5.** Git-like features will allow collaboration with versions, timestamps and forking. Each node has a verifiable past and, potentially, a defined future, as each note can be defined in time as what should be the current version. As Alice's recipe changes in time, people can be notified and see a complete and verifiable history without the cost of blockchain transactions. The recipe can also be forked, modified and shared, showing how others have evolved it. Here again, tokens and tools allow Cortex to filter up the best and most authentic versions.
- 3.1.6.** Commenting: Because blinks can connect notes, anyone can create a comment on a note. The benefit is that each user can select to see only the notes they choose, only from those that are part of their network.

- 3.1.7.** Everything Alice creates in Cortex has a unique identity, but can also serve as a unique identity if Alice decides to hold identity information there. The tree structure also allows Alice to only share relevant information, say, that she's over 21 to buy wine to go with her lasagna. That information can be certified and signed by certifying authorities. The notes/pages of Cortex can be used for just about anything digital with verifiable ownership and history.
- 3.1.8.** Domains/NFTs are on Ethereum and Polygon, but keys work across chains. Data structures (beyond NFT domains on Ethereum) are chain-agnostic and we expect will become chain independent. Potential to incorporate other chains as needed.

4. Clusters are collaboration units:

- 4.1.** Cortex enables a new way to collaborate using note clusters. They're a bit like file structures. They are hierarchical reference frames that define how the notes within clusters relate to one another.
 - 4.1.1.** Each cluster can be a self-contained structure that's shareable, can both hold tokens and be represented by a token. Clusters have unlimited children/grandchildren, etc. under the root key pair.
 - 4.1.2.** Keylinks can link within or across clusters to new notes representing new relationships.
 - 4.1.3.** Any key pair to which a user holds a private key can be the beginning of a cluster. These can be generated randomly, and you could also use a current Ethereum or Bitcoin address for which you hold the key. The cluster can be instantiated with a 12 word passphrase.
 - 4.1.4.** The cluster is related in how the keys are derived, but they act pretty much like a file system.
 - 4.1.5.** Think of notes within a cluster very much like web pages. They can live on their own, as the home page of a site, or as a page in the file structure of a site.
 - 4.1.6.** In fact, because the clusters of notes are created in markdown, they can easily be converted to web pages.
 - 4.1.7.** Topics allow users to organize and contribute to global, local or private repositories.
 - 4.1.8.** Each cluster can be read-only or writable. To be able to edit you must have the private key which is used to update a note or create a new note.
 - 4.1.9.** Clusters can become functional units or models of how ideas and context relate. A new kind of threaded content. Could be useful in scientific disciplines for sharing research for example. Code, content, statistics and data can all be part of one shareable package that can then be forked, modified, etc, etc.

5. Use Cases:

- 5.1. **Private communication and collaboration channels:** Channels allow you to choose how you interact and with whom, but in a way that you own and control. Think of DMs and group chats on most social platforms. The platform still owns your messages. The difference with Cortex is that you and your contacts own the messages and the things you create. The messages or notes are decentralized and can live encrypted where you and your collaborators choose. Read and write access is controlled at the protocol level by who has the public and private keys/ addresses in a way that's simple for the users.
- 5.2. **Quickly publish websites:** Publishing your thoughts to one of a variety of channels becomes a breeze as you already have a domain within Cortex. Publishing can be done within the cortex environment and on the web at large. When you're ready, you'll just hit publish. If it's a shared channel, others will be able to fork, update and share like a wiki. The entire history will be preserved.
- 5.3. **Share only what you want to share, in the right context.** There's a lot of things you'll want to share in just a very limited way. Maybe just at the point of entry to an event or in a real-life encounter like a physician's visit. Things you don't want shared or copied in a digital form. With a private channel, all that stuff can be yours. You can have it sent to a unique address in your private channel that only you can access. Share things in context wherever you go online or in real life.
- 5.4. **Earn coins for content:** video, music, social. Each bit of content will have a crypto address to receive payments, forever. As each website within a domain can be an NFT, you can distribute tokens to users of your website, for example. We are exploring ways to make tokens very low cost to mint.
- 5.5. **Web3 time travel:** See evolution of ideas, code in past present, and future updates to sites.
- 5.6. **Search by your social networks, your closest links:** As your notebook is arranged by topics that can be posted publicly or part of a group, you'll be able to search what's important or what your favorite people are thinking about a specific topic in a way that's structured. You'll be able to see a whole tree of thinking on a topic. Search just on those closest to you and degrees of separation, all in a way that's private because the data is owned and controlled by you and your collaborators. New tools and token uses will allow you to filter up the best, most reliable information for you.
- 5.7. **More useful identity.** Self-sovereign, contextualized, private and secure documents can act as identification. With cortex, your domain becomes your identity with a wallet that holds proofs in a structured way. You'll be able to share and prove what's yours right on the spot in the Cortex app, including NFTs. NFTs will become much easier to showcase with notes around them. Just show a barcode and you can prove anything about yourself, signed by an authority in a channel you share.
- 5.8. **Unlimited addresses, unlimited contexts, unlimited tokens:** Cortex can act as a wallet for many use cases. Having keys in a hierarchical relationship creates lots of new use cases for supplying keys and content only in specific instances, or for single uses.

6. Technology

- 6.1.** Cortex is built on YouBase Distributed Data Protocol and will be open source. A separate document will provide details. It consists of three main innovations and protocols:
- 6.1.1.** HDName, an HD Wallet with human-readable keys;
 - 6.1.2.** HDData, data structures accessed through an HD wallet;
 - 6.1.3.** HDEntanglement, a method for creating private channels between HD wallets.
- 6.2.** Butterfly Protocol will provide globally unique addresses and identities that can (but it is not a requirement) act as a root identity to the Cortex application. Using Cortex domains will simplify communications across the application and within the communities.

7. Tokenomics

- 7.1.** .crtx domain is a fully-owned top-level domain, or TLD, meaning YouBase owns the NFT for the TLD and can issue the subTokens within that TLD for subdomain ownership. As part of the Bproto Innovation Program, 100K BFLY tokens have been burned in creation of the .crtx TLD.
- 7.2.** Token allocations

Allocation	%	Tokens	Prices	Vesting
Team	21.0%	21,000,000	-	6 month cliff and 24 month vesting
Liquidity	10.0%	10,000,000	-	Sufficient for AMM listing, rest non-circulating
Dev	12.5%	12,500,000	-	1 month cliff 24 month vesting
Operations	12.5%	12,500,000	-	1 month cliff 24 month vesting
Marketing	12.5%	12,500,000	-	1 month cliff 24 month vesting
Reserve	21.0%	21,000,000	-	12 month cliff and 36 month vesting
Advisor Sale	1.0%	1,000,000	\$0.13	20% TGE, Rest vested over 9 months
Seed Sale	4.0%	4,000,000	\$0.16	20% TGE, Rest vested over 6 months
Private Sale	5.0%	5,000,000	\$0.21	20% TGE, Rest vested over 4 months
Public Sale	0.5%	500,000	\$0.29*	Batch sale possible where price determined by purchase volume
Total	100.0%	100,000,000		

- 7.3.10.** Endless digital asset creation beyond NFTs. Virtually anything you create can become a public or private asset as everything has an immutable identity, owner, and timeline.

8. Conclusion:

- 8.1.** Much like the world we inhabit, in the near future all digital "stuff" (data, tokens and files) can have an identity and a context in digital space, a time span, and an owner. Cortex provides these in some exciting new ways to give users new ways to create and interact online. For us, the promise of crypto has always been to create a non-fungible digital world that we can map in parallel to our current world. We are excited to build a community of contributors to extend science and human progress, extend commerce in unlimited new ways, and most of all, for extending some fun.

