OVERVIEW

LOOPRING'S VISION

Loopring builds protocols, infrastructure, and user-facing products for the future of finance. We believe this future is built on Ethereum, and specifically on layer 2 (zkRollups).

Users of decentralized finance (DeFi) need not choose between security and performance. Loopring's L2 provides a low-fee, high-speed platform for trading, swapping, liquidity providing, and payments - without sacrificing Ethereum security at all.

We envision a digital economy where users are empowered and always in control of their assets. Loopring has succeeded in proving that non-custodial technology can replicate custodial alternatives in speed, cost, and experience. We have made DEXes as performant as CEXes, and will outcompete incumbent fintech.

Loopring's objective is to design and engineer the best-in-class **zkRollup exchange and payment protocol** on Ethereum, and to operate products that bring it to users across the world.

LOOPRING PROTOCOL IS COMPLETELY SECURE

The security and sovereignty of user assets is Loopring's top priority. We deployed the first zkRollup protocol on Ethereum - the most secure scaling mechanism the industry knows of, whereby users can access their assets in all circumstances. On Loopring protocol, exchange and payment applications simply **cannot be evil**. No person, company, nor state can come between a user and their Ethereum-based assets.

Loopring inherits **100% Ethereum-level security guarantees**. Loopring protocol does not rely on any external validators, consensus, or cryptoeconomic assumptions. Only Ethereum and Zero Knowledge cryptography. All actions are correct by construction, or simply cannot happen: exchange operators are constrained to purely protocol-described behaviour.

LOOPRING PROTOCOL IS A BUSINESS'S BEST-FRIEND

Control is a liability. For centralized crypto exchanges, the stress and fear of being hacked is immense. So is the regulatory burden. Loopring protocol ensures that an exchange or payment application simply cannot access or lose user assets. And without control over user assets, exchanges may also shed some regulatory burden. Using an open-sourced, audited, cryptographically sound Ethereum protocol means less time & money spent on security & compliance, and more on growing your business.

If you don't use the Loopring protocol to power your exchange, you can still use it for its payment functionality - as a **fast, gas-free lane for users to deposit and withdraw Ethereum-based assets**. Augment the experience for users, while dramatically reducing your network (gas) costs. No extra tooling required.

LOOPRING PROTOCOL IS REMARKABLY PERFORMANT

Loopring solves scalability without compromising Ethereum security. Our zkRollup throughput reaches approximately **1000x of Ethereum**, or as high as 2,025 trades per second. The cost per transaction is reduced to as little as 1/100th the cost of Ethereum, with trades and transfers costing fractions of a cent. With Loopring, we expect non-custodial exchanges and payment apps to continue outcompeting and displacing centralized ones.

Ethereum has become so popular and heavily used, that it exists in a near-permanent state of congestion, where users face absurdly high fees and long delays. Layer 2 presents a less congested fast lane, where users **transact gas-free and without delay**, yet completely coupled to Ethereum security. From a user's POV, it just works, with blockchain UX problems abstracted. Loopring's performance is sufficient for algorithmic traders and market makers to deploy legacy-style, HFT strategies on DEXes for the first time.

LOOPRING - ACROSS THE STACK

Loopring project began in June 2017, and has evolved into a multifaceted Ethereum effort, operating across the stack, from protocol to product.

LOOPRING PROTOCOL

Loopring protocol is an open source zkRollup protocol. It is a collection of Ethereum smart contracts and ZK circuits which describe how to build highly-secure, highly-scalable orderbook-based DEXes, AMMs, and payment apps. It was the first rollup protocol deployed on Ethereum, and has led the ecosystem into the era of Layer 2 scaling (L2). The current protocol version, v3.8, is our fifth deployed version (the first three were non-zkRollup). It provides a solution for the most outstanding challenge of all decentralized protocols - performance, or more precisely, **much higher performance without a tradeoff in security.**

Click here to learn about the technical details of Loopring protocol 3.8.

LOOPRING RELAYER

Loopring relayer (aka operator) is our implementation of the backend system that interacts with the protocol to make a zkRollup run. It hosts and updates the off-chain Merkle tree, creates rollup blocks, generates zkSNARK proofs of their validity, publishes data + proofs to Ethereum, and more. Our relayer has been highly optimized for its use case: from orderbook matching to proof generation. Note: in doing all of this, it can never, ever, access or freeze user funds - the protocol simply does not allow it.

While Loopring protocol is agnostic to relayer (anyone can build & use their own relayer(s) to run their zkRollup/products), what is known as the canonical 'Loopring L2' (and the products atop) is serviced by the Loopring relayer. Loopring relayer API can be used by builders, users, and other applications that want to perform gas-free, high-speed trading and transfers on Ethereum, or otherwise read or write to our L2.

LOOPRING LAYER2 APP

Loopring Layer2 App (loopring.io/#/layer2) is a high-performance, non-custodial exchange (AMM and orderbook) and payment platform that the Loopring team operates. It is built on the Loopring protocol, run by the Loopring relayer, and provides the most advanced and enjoyable trading experience on Ethereum. Gas-free, blazing fast, completely secure. Whether you are doing a single swap, 30 trades per minute, providing liquidity in the AMM pool or orderbook, or transferring tokens to 1 friend or 100 friends, Loopring Layer2 is the L2 standard.

Click here to get on the Loopring Exchange. It requires only an Ethereum wallet.

LOOPRING WALLET

Loopring Wallet is an Ethereum mobile smart contract wallet, with Loopring zkRollup baked in. It is the first smart wallet app with L2 scaling, and provides a secure, intuitive, powerful Ethereum experience in your pocket. Swap on the AMM, become an LP, trade on the books, invest & earn in DeFi, send payments to anyone, anywhere - all gas-free, and at the tap of a finger.

Completely self-custodial, only smarter. You can say goodbye to seed phrases and paper backups, and say hello to social recovery. This means choosing people, institutions, and hardware that you trust as the guardians of your wallet. If ever you lose access to your mobile, they help you recover your assets. As long as more than half of your guardians are trustworthy, your assets are secure. You can also set limits on daily transfers, and whitelist trusted addresses.

Click here to visit the Loopring Smart Wallet page, where you can download the app.