WHITE-PAPER

Table of Contents

1. Welcome to the Lattice Network next-generation blockchain

The crypto ecosystem has evolved manifolds in the past few years. Decentralized finance and NFTs are multi-billion dollar industries in themselves. Individuals, funds, merchants, developers, governments, and financial institutions are increasingly seeking to explore, adapt, and capitalize on opportunities enabled by blockchain technology.

With the current global cumulative value of crypto assets under management reaching around $1.1 trillion (as of 18.08.2022) and continuously growing, the crypto market as a whole has attracted many conglomerates, institutional investors, retail traders, and millions of daily users of decentralized applications.

With the blockchain ecosystem growing rapidly, new technologies are formed to provide unique solutions, apps and concepts in an ever-changing ecosystem. At first, layer 1 blockchains offered decentralization and security. But unfortunately, this often meant that scalability was compromised, especially in the case of Bitcoin, which only provided the two aspects mentioned above.

At LATTICE, we believe in the world-reshaping power of this technology. We are committed to building the tools and scalable infrastructure to carry out that mission. LATTICE offers several solutions and network services to facilitate entry and participation into the new Web3 economy, which we will lay out in this whitepaper.

1.1 What is Lattice Network ?

LATTICE Network is building an infrastructure for Network-as-a-Service (NaaS). Lattice's Network is a highly scalable and eco-friendly Layer 1 blockchain that achieves high throughput and offers compatibility with the Ethereum VM and all other major blockchain networks. LATTICE's innovative design and consensus mechanisms dramatically improve scalability, security, interoperability, and Eco friendliness for the future of digital assets, Dapps, and Web3.

At a high level, LATTICE Network offers the following benefits…

Lightning Fast Transfers and Zero Fees

With LATTICE's AI Delegated Proof-of-Vote consensus algorithm (AIDPOV), its transactional flow and processing of a transaction take less than a second with 7000+ transactions per second and scale to thousands of external chain nodes, as opposed to BTC and ETH, which take much longer and require multiple confirmations on their ledgers to produce a confirmed transaction.

Trust and transparency

Blockchains create trust by giving all parties access to reliable, immutable information. Data is shared across parties, making it more accurate and consistent. Everyone (with permission) can verify the authenticity of the information, which improves transparency and reduces fraud. The decentralized nature ensures that no one single entity can alter data because to update the ledger, the network needs to reach consensus first.

Highly Secure

Blockchain technology ensures various security measures. By storing information in a distributed manner across many nodes, operated by quantum computers, we can mitigate any single point of failure. Our Quantum AI security prevents any hacker attacks or risk of information loss, and ensures full user ownership of data. If a failure does happen to occur, each node possesses a complete copy of the blockchain, so data is never lost or compromised (i.e. it is fully tamper-proof). This design also minimizes risk of downtime, as replicating information across nodes ensures high availability and reliability. Our AI Delegated Proof-of-Vote (AIDPOV) consensus mechanism allows transactions to be processed asynchronously. This increases the speed and throughput of transactions, removing the need for mining, and unlocking unparalleled security and scalability.

A More Scalable, Efficient, and Eco Friendly Solution

The main challenge for other Layer 1 blockchain networks is the limited transaction throughput that does not achieve the level required for most processes. LATTICE's innovative consensus mechanism AIDPOV(Artificial Intelligence Delegated Proof-of-Vote), enables us to process 7,000+ transactions per second and scale to thousands of external chain nodes. Transactions are finalized within a second and with zero fees. The extensive network spectrum settles transactions instantly and without the risk of reversibility. This can be implemented both with permission or permissionless settings.

Additionally, LATTICE Network builds trust with data from trusted licensed third-parties, who streamline operations for regulated industries and saves time and money. Compared to other blockchain solutions, LATTICE's Multidimensional block-lattice structure combines scalability, decentralization, and security. It prevents network strain and cleverly handles the scalability and energy consumption issues that other chains hold. This consensus mechanism prevents the use of mining so there is zero-carbon footprint and zero gas fees.

A Fully EVM Compatible Blockchain

LATTICE Network's performance scales to a large number of nodes, including integrations of external chain full nodes. LATTICE Network's products are fully customizable and its capabilities allow external full-nodes to be integrated, like the Ethereum Virtual Machine, Bitcoin, Avalanche, Solana, Binance, Tron, Polkadot, Polygon and many more to come; it ensures seamless and much more secure transactions with zero fees. This allows you to easily deploy and scale your Dapps, all while benefiting from the next generation quantum speed consensus.

Open Source

LATTICE's fast, eco-friendly network is completely open-source and decentralized. Anyone can read its code, monitor progress, comment, and contribute to the future of the network.

Optimizing the blockchain 5 lemma

The blockchain 5 lemma is the LATTICE networks outlook on the future of distributed ledger technologies, which have to balance between **speed**, **security**, **scalability**, **computational effectiveness**, and being **eco-friendly**.

Comparing the 5 lemma to other blockchain operational consensuses, it is required to optimize all 5 pillars for the future of blockchains, unlike others where it's not possible to optimize all 5 at the same time without any tradeoffs.

For example, a distributed ledger such as Bitcoin has arguably strong security through its consensus protocol and decentralization, but gives up speed, scalability, computational effectiveness and being eco-unfriendly as a result.

LATTICE Network achieves decentralization and security through a chosen permission factor and a next generation consensus protocol, in which anyone can join and leave the network at any time and all nodes are equal.

1.2 How does it work?

LATTICE Network incorporates a Multidimensional Block Lattice structure, no limit to scalability while improving on security. In Block Lattice structure, every account has a unique blockchain to record its own transactional information. With Smart Contract functionality, LATTICE Network supports multiple token issuance within one account. Each account supports multiple tokens and each new token added will be mapped to a new chain within the same account, so that each account can have multiple chains. Each token has its own "OPEN Block" in every single account. Since one token/one chain is one dimension, the structure with multiple tokens creates a

multidimensional Block Lattice. Each blockchain for an identical token is independent from others. The underlying structure of each token blockchain carries the Block Lattice structure and thus stays concise and agile.

Multidimensional Block-Lattice structure brings LATTICE Network the following benefits:

Low Transaction Validation Latency
The use of independent account-chains enables the user accounts to be updated asynchronously, without the need to involve the entire network. The dual-transaction approach leaves the process of transaction verification to the affected accounts, such as the sender and the receiver. This option eliminates the need for miners, meaning that transactions are instant and with zero fees. The network, therefore, becomes more scalable and agile.

Scalability
Scalability is hugely important, especially for web3 applications, because it requires the processing power and capability to create smart contracts, more liquidity for DeFi applications, building dApps and increased transparency. It is comparable to Ethereum 2.0 in terms of its speed and capability.

Transactions on LATTICE are handled independently of the main ledger. Every transaction is also an independent block that fits into a User Datagram Protocol (UDP) transactional packet and recorded as a unique block. UDP's are transactional packets that help keep computational costs low, allowing you to send transactions to accounts that are offline. Using a system of references and hash pointers eliminates issues relating to block size and allows the network to scale without all nodes having to hold a copy of every transaction ever made. Rather, nodes store the most recent and current blocks of each account-chain. Consequently, the network can achieve a drastically higher scale than other blockchain networks.

This is where block lattice and mainstream blockchain differentiate. A transaction on the blockchain cannot be isolated and recorded on the main chain. A specific number of transactions are verified before being added to the main chain. This means increased transactions lead to a steady decline in speed, slowing down the entire network. LATTICE Network uses "account chains" to create a lighter network, reducing the problems of scalability that blockchain-based solutions often encounter.

Low Energy Consumption
The LATTICE Network is built upon an AIDPOV architecture: AI-powered Delegated Proof-of-Vote (AIDPOV). This consensus can achieve low energy consumption because it does not require mining activity. All energy is contributed to make effective computing. Both consensus mechanisms will be elaborated later in this paper.

Inherent Anti-Centralization

Mechanism guaranteed anti-centralization refers to the fact that each account has its own ledger, namely, the account-chain structure, and validation is conducted by delegates via an asynchronous mode. This is unlike the Proof-of-Work (PoW) consensus used by Bitcoin, where ledger generation and confirmation is completed by miner nodes; and unlike the Proof-of-Stake (PoS) where transaction validation is based on the number of coins a validator stakes.

In addition, the structure of the anti-centralized Block Lattice requires the transaction sender and receiver to conduct a small computational effort input - local PoW process. This process has decreased the possibility of transaction centralization, similar to how a decentralized exchange decreased the possibility of super account formation.

1.3 LATTICE Coin (LATT)

LATTICE is a decentralized blockchain network with a native cryptocurrency known as **LATT**. LATT is used for governance, payments, and to contribute to the health and longevity of the network. LATT's main utility is sending and receiving payments of value on the LATTICE Network, with the advantage of having a high-throughput, fast finality, and zero fees. The LATT total supply is 3.4 Trillion and is currently in circulation on the LATTICE Network.

Features and Utility:

LATT Zero Network fees

On LATTICE Network there are zero network fees and zero transaction fees to deploy smart contracts.

Pay with LATT

The main utility of the LATT is sending and receiving payments of value on the LATTICE Network, with the advantage of having a high-throughput, fast finality, and zero fees. On LATTICE Network, transfers take 1 second and have zero cost.

LATT On-Chained governance

LATT is needed for on-chain governance. Because LATTICE Network is a fully permission-less and leaderless decentralized ecosystem, any decision regarding the network is carried out by on-chain governance. With governance, stakers can propose and vote for changes and improvements. LATT is the governance token required to participate in the voting process.

Securing the network

The LATT is also used to secure the LATT market-cap. Besides preventing centralisation, the system is also environmentally friendly and holding LATT contributes to the longevity and sustainability of the network.

How to buy LATT?

You will be able to buy LATT on the LATTICE Network or all major cryptocurrency exchanges. You can buy LATT using BTC, ETH, USDT, or BNB or any LATTICE Network ecosystem coins.

How to store LATT?

We discourage storing your LATT on exchanges due to the custodial risks. You would also miss out on staking rewards. Staking is easy and you can do it directly from LATTICE Network Wallet.

1.4 Staking & Rewards with LATT

What is staking?

Staking offers crypto holders a way of putting their digital assets to work and earning passive income without needing to sell them.

When you stake your digital assets, you lock up the coins in order to participate in running the blockchain and maintaining the market cap of LATTICE Network products. In exchange for that, you earn rewards calculated in percentage yields. These returns are typically much higher than any interest rate offered by banks. (Coindesk)

LATT Staking

Staking LATT gives rights to participate in the open governance process, which governs the evolution of the network. Earn rewards by staking your LATT to help grow the network. Choose your staking preference, start earning with just a few clicks, and use your staked funds as collateral in DeFi.

In a few simple easy steps you can start earning staking rewards:

- Access the LATTICE Network Wallet

Open the wallet from your computer or your mobile device. Create a new wallet, or access an existing one using a mnemonic key-store file.

- Deposit your LATT

Transfer your LATT from an exchange to your LATTICE Network wallet.

- Flexible & Inclusive - Stake on your own terms

On LATTICE Network, there's no minimum stake. You can stake and earn rewards with just 1 LATT. Stake-as-you-go with no lock-up, or lock-up your LATT for up to 12 months.

- Contribution rewarded

On LATTICE Network , your delegated LATT gives you more LATT, a LATTICE-based synthetic asset you can use within the LATTICE Network DeFi ecosystem. You can claim your reward every few hours and compound them for even greater returns on your delegation.

1.5 DeFi on LATTICE Network

LATTICE Network offers the first DeFi stack built on an AI-powered Delegated Proof of Vote (AIDPOV) consensus. The speed, the reliability and at zero cost, is incomparable to any other predecessor Blockchain.

On LATTICE Network, you can use your LATT and any LATTICE Network project coins while accessing the DeFi tools.

- Get started instantly

Access DeFi right from your wallet – start trading, make payments and staking instantly. Just follow the registration or setup.

- Fully decentralized

You're always in control of your keys and can trade from your computer or your personal device.

- Next-generation DeFi platform

Unlock a whole new way of decentralized trading. Transactions on LATTICE Network are almost instant and have a zero cost.

LATTICE Network DeFi products:

Swap your digital assets

You can switch any digital assets from any chain directly from your LATTICE Network wallet. Take advantage of trading LATTICE-based coins and other digital synthetic coins and other top tier full nodes, which represent tokens outside the LATTICE Network ecosystem. You can switch Bitcoin with Ethereum, and many other pairs of cryptocurrencies from different ecosystems.

Lend and borrow

Lend your LATT and any digital assets to borrow crypto currency as collateral. Lenders contribute to the liquidity pool for a certain period of time and interest can be earned on your asset value.

2. Tools accessible on the LATTICE Network

2.1 LATTICE Network Wallet

LATTICE Network Wallet is the native wallet for LATTICE Network's main-net. With LATTICE Network Wallet, you can:

- Install the IOS or Android wallet app, or use the PWA Web app wallet.
- Create a wallet
- Load and existing wallet
- Send and receive LATTICE-based assets and any digital synthetic assets
- Stake LATT

For more information, check out the instructions on: How to use LATTICE Network Wallet

2.2 Store and send LATT and all digital assets

You can safely store LATT, or any digital synthetic asset using LATTICE Network or any leading mobile wallets.

1. LATTICE Network Wallet

The official wallet of LATTICE that allows you to send, receive, stake your LATT, and access the LATTICE DeFi ecosystem.

2. Metamask

As the most popular software wallet and browser extension, Metamask allows you to store mainnet LATT and interact with LATTICE Network Dapps.

3. Trust Wallet

Another trusted and widely used crypto wallet, Trust Wallet supports mainnet LATTICE Network.

4. Ledger

Ledger Nano is the most popular hardware wallet and the most secure way to store your mainnet LATTICE-based assets and interact with LATTICE Network Dapps.

3. Solutions: Empowering the next era of Web3 enabled businesses

LATTICE empowers the world's leading institutions, enterprises, and governments to develop and scale global solutions using blockchain technology. Launch digital assets, build interfaces, and streamline payments without ever sacrificing on security. Tap into the power of DeFi, gain access to a global investor audience, and improve liquidity, all while cutting out fees and speeding up processes.

A wide range of industries can benefit from LATTICE Network's unique and future-ready infrastructure…

Digital Asset Creation

LATTICE Network's blockchain technology allows you to quickly create digital assets for monetizing traditional financial instruments, gaining access to a global investor audience, and improving liquidity.

Institutional Finance

LATTICE Network for enterprise-grade applications brings efficiency to the back office, mitigating intermediaries or siloed infrastructures and keeping transactional safety while eliminating custodial risk. Real-time settlement will become a reality, accompanied by transaction cost savings.

Tokenized Digital Content

Digital Content tokenization enables all digital content to have the opportunity to be tangible for the first time globally. For journalism and advertising companies , it means streamlined operations, historic content value based on subscriptions, and alternative advertisement vehicles. Digitalization and fractionalization of digital content gives exposure to secondary markets and attracts new sectors.

Tokenized Physical Assets and Real Estate

The tokenization of physical assets enables niche markets to be accessed globally and widens the exposure of a product in its industry. The tokenization of real estate allows for better access to real estate investments for the public, as individuals are now able to own fractional amounts of a tokenized piece of Real Estate. Further allowing institutions to streamline their operations, gain access to a wider investor pool and explore alternative financing options. The digitalization and fractionalization of physical assets and real estate enables secondary markets to be more liquid, thus attracting new investors.

Supply Chain Management

Digital processes can improve efficiency, transparency, and accountability in the current operations. LATTICE Network enables real-time traceability, identifying counterfeit operations and trade contracts more effectively.

Smart Healthcare

LATTICE Network uses its AIDPOV consensus to verify the authenticity of pharmaceuticals, minimizing health risks for patients. Secure data storage can ensure patient confidentiality while also improving data sharing.

Central Bank Solutions

Central bank-issued digital currencies, or CBDCs, are a new approach to providing financial stability while speeding up interbank settlements, reducing transaction costs and making the financial system more accessible to the wider public.

AI & AGI Integration

With LATTICE Network, all Artificial Intelligence business models have access for the first time to next generation AI based blockchain tools. LATTICE Network's AI Integration processes constitute a vast improvement in efficiency and transparency over current operations and enables real-time traceability, identifying answers more effectively.

Enterprises and Governments

LATTICE Network provides Next Generation Enterprise and government blockchain services centered around its innovative and breakthrough consensus-as-a-service solution. They can now start migrating their digital presence onto a scalable blockchain and use LATTICE's user-driven tools and full time development services to take on the decentralised world and all of blockchains' advantages. Whether it be wallet development and integration tools, payment systems, user-driven metaverse development and integrations tools, NFT studio creation tools, inventory systems, or multi-currency exchange solutions, we assist companies to build public or private distributed ledger on a high-scalable platform with Quantum speed settlement times at zero costs for their users.

Work With Us

LATTICE provides a vast range of Web3 solutions that are adaptable to anyone's needs and our scalable tools and infrastructure are designed to unlock real-world value. We work in conjunction with universities, global industry leaders, blockchain and cyber security experts, central banks, and government institutions to provide our services at every step: from ideation, development, to expansion and maintenance.
Want to optimize your business process and set up your company on LATTICE Network? Contact us.

Join the global community.

Join a fast-growing and global community of builders, ushering in the new era of the internet.

- ➔ Website: https://latticelabs.io/
- ➔ Blog: https://news.latticelabs.io/
- ➔ Discord: https://discord.gg/latticelabs
- ➔ Twitter: https://twitter.com/Lattice_Labs