LAXCE

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WHITE PAPER

1.0

2024-2025

www.laxce.com

Introduction

Laxce is a decentralized Ethereum Layer-2 platform specifically designed to facilitate the seamless integration of Real-World Assets (RWAs) into the blockchain ecosystem. By addressing the scalability, latency, and regulatory challenges inherent in RWA tokenization, Laxce aims to unlock new opportunities for innovation and economic growth

Problem Statement

- **Scalability:** The Ethereum mainnet's current capacity is insufficient to handle the volume of transactions required for large-scale RWA tokenization.
- **Latency:** The confirmation times on Ethereum can be too slow for time-sensitive RWA transactions.
- **Regulatory Compliance:** Ensuring that RWA tokenizations comply with relevant regulations is crucial but can be complex within a decentralized environment.

Our Mission

To empower individuals and businesses by providing a secure, scalable, and cost-effective platform for the tokenization of real-world assets, facilitating efficient transactions, enhanced liquidity, and new economic opportunities.

Our Vision

To be the leading global platform for tokenized real-world assets, driving innovation, fostering economic growth, and democratizing access to investment opportunities.

Real World Asset Tokenisation

RWA stands for Real-World Assets. These are physical or intangible assets that exist in the real world, such as:

- Real estate: Properties like houses, apartments, and commercial buildings
- Commodities: Natural resources like gold, oil, and agricultural products
- Art: Paintings, sculptures, and other valuable artworks
- Intellectual property: Patents, copyrights, and trademarks

By tokenizing RWAs, blockchain platforms like Laxce can enable fractional ownership, increased liquidity, and enhanced transparency. This opens up new investment opportunities and allows for more efficient asset management.

The Importance of Real-World Asset (RWA) Tokenization

1. **Increased Liquidity:** By breaking down assets into smaller, tradable tokens, RWA tokenization can significantly increase liquidity. This means that assets can be bought and sold more easily, reducing transaction costs and improving market efficiency.

2. **Fractional Ownership** Tokenization allows for fractional ownership of assets, making them accessible to a wider range of investors. This democratizes investment opportunities and reduces the minimum investment required.

3. **Enhanced Transparency** RWA tokenization can improve transparency by providing a clear record of ownership, transactions, and asset performance. This can increase trust and confidence in the asset market.

4. **Efficient Asset Management** — Tokenized assets can be managed more efficiently through blockchain technology. Smart contracts can automate processes like rent collection, dividend payments, and voting rights, reducing administrative costs and increasing accuracy.

5. **New Investment Opportunities** — RWA tokenization opens up new investment opportunities for individuals and institutions. Investors can diversify their portfolios by investing in a wider range of assets, including those that were previously difficult to access.

In summary, RWA tokenization has the potential to revolutionize the way assets are owned, traded, and managed. By addressing challenges such as liquidity, accessibility, and transparency, it can create new opportunities for investors and businesses alike.

Laxce: A Scalable, Compliant, and Efficient Layer-2

Laxce addresses these challenges by leveraging the following key features:

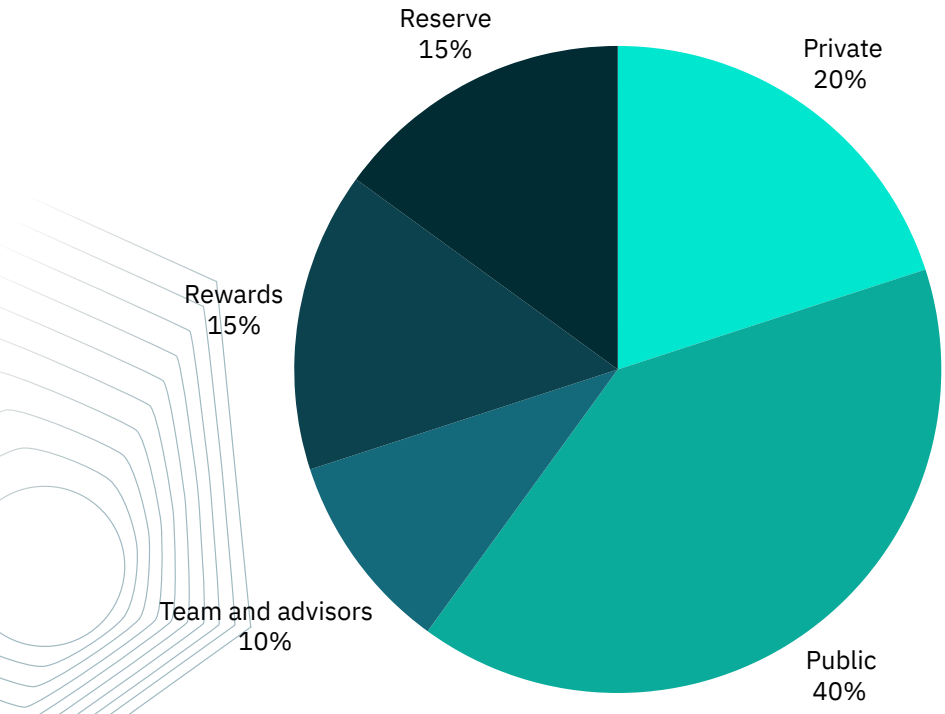
- **Off-Chain Settlement:** To reduce the burden on the Ethereum mainnet, most RWA transactions are settled off-chain. Only critical events, such as asset transfers or disputes, are recorded on the mainnet.
- **Regulatory Compliance Framework:** Laxce incorporates a robust framework to comply with relevant regulations, including KYC/AML, securities laws, and data privacy requirements. This involves partnerships with regulatory bodies and compliance providers.
- **Interoperability:** Laxce ensures seamless interoperability with other Ethereum-based platforms and protocols to facilitate the exchange of RWA tokens.

Use Cases

Real-world Assets(RWA)	RWA, including real estate, commodities, art, and intellectual property. This can facilitate fractional ownership, improve liquidity, and enhance asset management efficiency.
Micropayments	The low transaction fees and high throughput of Laxce make it well-suited for micropayments, enabling seamless and cost-effective transactions for small-value items or services.
Payments	Laxce can be used for various payment applications, including peer-to-peer payments, cross-border remittances, and online shopping. The network's security and efficiency provide a reliable and convenient payment solution.
Crypto Trading	Laxce offers a scalable and secure platform for crypto trading, supporting a wide range of digital assets and trading pairs. The network's low latency and high throughput ensure fast and efficient execution of trades.
Supply Chain Financing	Laxce can be used to streamline supply chain financing processes by enabling the tokenization of invoices, purchase orders, and other trade documents. This can improve cash flow, reduce financing costs, and enhance transparency.
Tokenized Deposits	Laxce allows for the creation of tokenized deposits, providing a secure and transparent way to earn interest on digital assets. This can offer a competitive alternative to traditional savings accounts.

Token Economics

A native token, LAX, will be introduced to incentivize network participation, facilitate governance, and potentially generate revenue through transaction fees. The tokenomics will be designed to align with the long-term goals of the network and ensure sustainability.



LAXCE Token

Maximum Supply

500,000,000

CAN EVER EXIST

Token Symbol

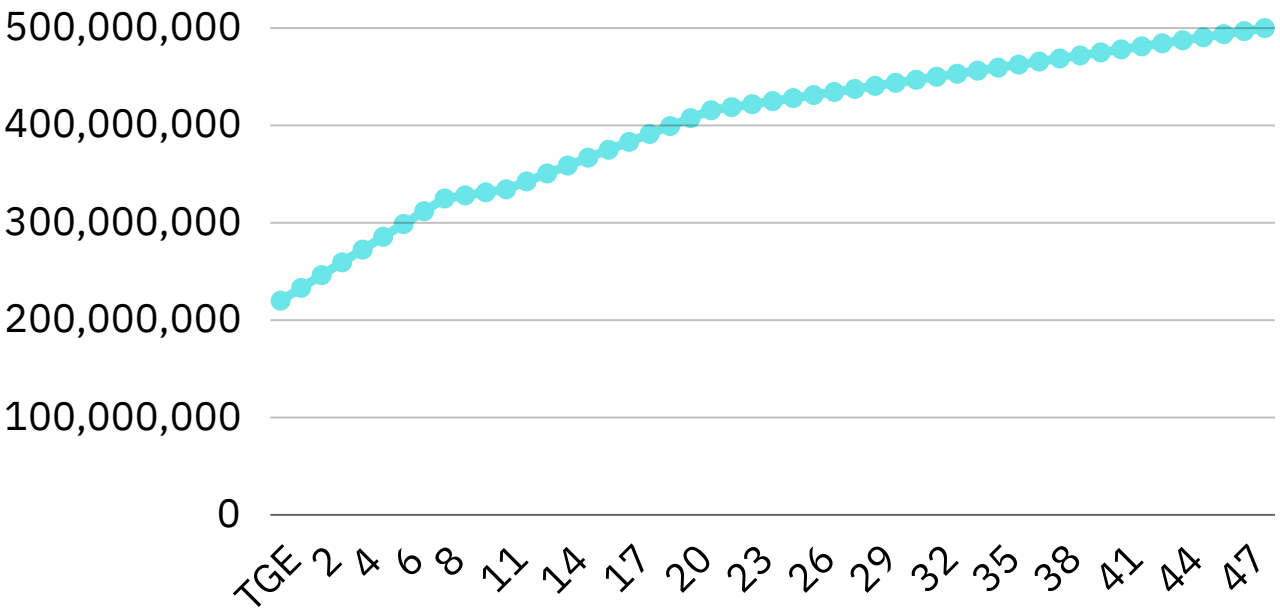
$LAX

NETWORK: ETHEREUM

Token Feature

DEFLATIONARY

Circulation



Road Map

Q4 2024

Testnet Launch

Launch Laxcedex, a decentralized exchange (DEX) on Ethereum, to facilitate the trading of digital assets and provide liquidity for the Laxce ecosystem.

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Token Launch

Launch the Laxce native token (LAX) to provide incentives for network participation and governance.

Governance Framework

Establish a decentralized governance mechanism to allow token holders to contribute to the network's development and decision-making.

Q1 2025

Mainnet Launch

Launch the Laxce mainnet on Polygon CDK's Validium, providing a scalable and secure platform for real-world asset tokenization.

Ecosystem Development

Foster a vibrant ecosystem by partnering with various organizations and projects within the blockchain and financial sectors.

Developer Tools

Release a comprehensive suite of developer tools and APIs to facilitate the creation of decentralized applications on the Laxce network.

Road Map

Q2 2025

Enterprise Solutions

Develop enterprise-grade solutions for large-scale tokenization projects and financial applications.

Micropayments and Payments

Integrate Laxce with payment gateways and merchants to enable seamless micropayments and payments for goods and services.

Cross-Chain Interoperability

Explore opportunities for cross-chain interoperability with other blockchains to expand the network's reach and capabilities.

Community Growth

Continue to build and engage with the Laxce community through events, workshops, and online forums.

Q3 2025

Real-World Asset Tokenization

Pilot projects for tokenizing real-world assets, such as real estate, commodities, and art.

Supply Chain Financing

Develop solutions for supply chain financing, utilizing the network's scalability and security to streamline trade finance processes.

Note: This roadmap is subject to change based on market conditions, technological advancements, and community feedback.

Technical Architecture

Laxce employs Polygon CDK's Validium architecture to achieve exceptional scalability and security.By leveraging Validium, Laxce offers a high-performance and secure platform for real-world asset tokenization and various financial applications.

Why Polygon CDK?

Polygon Chain Development Kit (CDK) is a modular, open source, software toolkit for blockchain developers which supports the installation and configuration of a variety of chain architectures.

Polygon CDK empowers developers to launch new L2 chains running Polygon zkEVM technology on Ethereum or, with optional validium networks and, in the future, transition existing layer 1 (L1) chains into custom ZK-EVM L2s.

CDK features

Polygon CDK provides the components necessary to build a layer 2 blockchain that is secure, scalable, and interoperable with other chains. Below are some of the key features of CDK

- Security: CDK builds high-performance, high-security, scalable L2s that utilize the latest innovations in zero-knowledge technology such as Plonky3.
- Scalability: Transaction fees are orders of magnitude lower than Ethereum and processed substantially faster. This enables a fast, cheap, and secure user experience unaffected by any high activity experienced on shared networks.
- Modularity: CDK modular components allow developers to easily customize their L2 environment and build a chain that meets their specific needs.
- Interoperability: Opt-in to the AggLayer to bootstrap your chain’s ecosystem, enable cross-chain transactions expanding your reach and user base, while attracting users and liquidity from other established chains.
- Sovereignty: Maintain full control over your chain’s revenue, governance, security, economic policies, and more.

Simplified Development

- **Pre-built Contracts**: Polygon CDK provides pre-built contracts for common use cases, such as ERC-20 tokens and ERC-721 NFTs, which can be customized to fit your specific needs.
- **High-Level Abstraction**: The CDK abstracts away the complexities of blockchain interactions, allowing you to focus on application logic rather than low-level details.
- **Simplified Deployment**: Deploying your dApp on a Polygon CDK chain is a straightforward process, involving a few simple steps

Scalability and Performance

- **Optimized for Ethereum Virtual Machine (EVM)**: Polygon CDK chains are fully compatible with the EVM, ensuring that your dApps can seamlessly interact with the Ethereum ecosystem.
- **High Throughput**: Polygon CDK chains offer high transaction throughput, making them suitable for applications that require a large number of transactions.
- **Low Latency**: Transactions on Polygon CDK chains are typically processed quickly, reducing the time it takes for users to see the results of their actions.

Security and Reliability

- **Secure Infrastructure:** Polygon CDK chains are built on a secure and reliable infrastructure, providing a safe and trustworthy environment for your dApps.
- **Regular Audits:** Polygon regularly conducts security audits of its CDK chains to identify and address potential vulnerabilities.
- **Backups and Recovery:** Polygon has robust backup and recovery mechanisms in place to ensure that your data is protected in case of unexpected events.

Interoperability

- **Compatibility with Ethereum:** Polygon CDK chains are fully compatible with the Ethereum blockchain, allowing you to easily integrate your dApps with other Ethereum-based applications.
- **Cross-Chain Bridges:** Polygon CDK chains support cross-chain bridges, enabling you to transfer assets and data between different blockchains.

Cost-Effectiveness

- **Low Transaction Fees:** Polygon CDK chains offer relatively low transaction fees compared to other blockchains, making it more affordable to build and run dApps.
- **Gas Optimization:** Polygon CDK includes features that help you optimize gas usage, reducing the cost of your transactions

These are just some of the features that made us choose Polygon CDK among other options.

CDK validium

The Polygon CDK validium is one of two configuration options of the Polygon CDK, the other being the Polygon zkEVM rollup.
As per the definition of validium, the Polygon CDK validium uses validity proofs to enforce integrity of state transitions, but it does not store transaction data on the Ethereum network.

The Polygon CDK validium is in fact a zero-knowledge validium (zkValidium) because it utilises the Polygon zkEVM's off-chain prover to produce zero-knowledge proofs, which are published as validity proofs. The use of the above-mentioned prover, to a certain extent, adds trustlessness to the Polygon CDK validium.

The validium mode inherits, not just the prover, but all the Polygon zkEVM's components and their functionalities, except that it does not publish transaction data on L1.

The validium configuration has one major advantage over the zkEVM rollup option: And that is, reduced gas fees due to the off-chain storage of transaction data, where only a hash of the transaction data gets stored on the Ethereum network.

Data availability committee (DAC)

In relation to storing transaction data off-chain, the CDK validium comes with the requirement to manage the data.

- First of all, the transaction data is not published to the L1 but only the hash of the data.
- Secondly, a trusted-sequencer collects transactions from the pool DB, puts them into batches and computes the hash of the transaction data.

It is due to the above two points that the Polygon CDK validium has to have a set of trusted actors, who can monitor and even authenticate the hash values that the sequencer proposes to be published on the L1.
The hash values need to be verified as true footprints of the transaction data corresponding to all transactions in the sequenced batches.

These trusted actors are collectively called the Data Availability Committee (DAC).

After verifying the proposed hash values individually, each DAC member signs them and sends the signature to the sequencer.

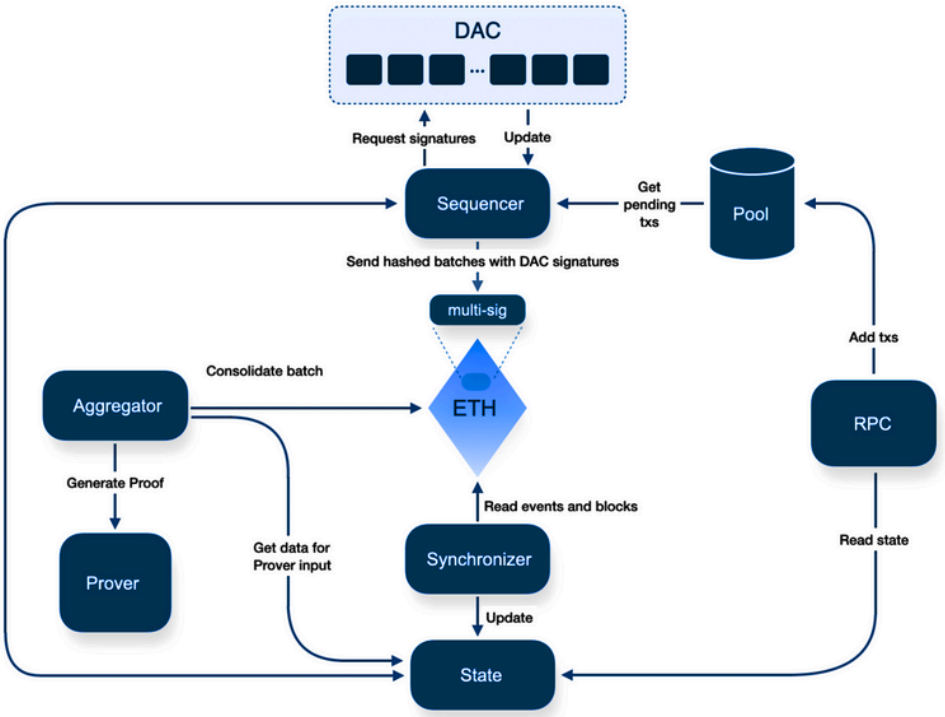
The sequencer uses a multi-sig, which is a custom-specified m-out-of-n multi-party protocol, to attach the required m signatures to the hash of the transaction data. The multi-sig contract lives on the L1 network.

Architecturally speaking, the Polygon CDK validium is therefore nothing but a zkEVM with a DAC. That is,
Polygon CDK validium = Polygon zkEVM + DAC.

Validium data flow

The DAC works together with the sequencer to control the flow of data and state changes.

The diagram below depicts a simplified outline of the Polygon CDK validium architecture. It particularly shows how the DAC and the sequencer relate in the overall data flow.



The entire process can be broken down as follows:

1. **Batch formation** — The sequencer collects user transactions, adds them to blocks, and puts the blocks in batches while recursively computing their hash values.

2. **Batch authentication** — Once the batches are assembled, and their hash values computed, they need to be authenticated by the DAC. The sequencer therefore forwards the batch data, and their corresponding hash values to the DAC, as a way to request for signatures.

3. **Data validation and storage** — The DAC nodes independently validate the batch data against the hash values received from the sequencer. Once validated, each hash value is stored in each DAC node's local database for future reference.

4. **Signature generation** — Each DAC node generates a signature for each batch hash. This serves as an endorsement of the batch's integrity and authenticity.

5. **Communication with Ethereum** — The sequencer collects the DAC members' signatures and the original batch hash, and submits them to the Ethereum network for verification.

6. **Verification on Ethereum** — A designated multi-sig smart contract on Ethereum verifies the submitted signatures against each DAC member's known signatures, and confirms that sufficient approval has been provided for the batch hash.

7. **Final settlement with zero-knowledge proof** — The aggregator prepares a proof for the batch via the prover and submits it to the Ethereum network. This proof confirms the validity of the transactions in the batch without revealing transaction details. The chain's state gets updated on Ethereum.

Validium vs rollup

Polygon CDK running in validium mode inherits the core functionalities of a zkEVM rollup node and adds a data availability layer.

	Rollup	Validium
Node type	zkEVM node	Validium node: zkEVM node with validium extensions
Data availability	On-chain via L1	Off-chain via a local option, or a DAC + DA node
Components	zkEVM components*	zkEVM components* + PostgreSQL database + on-chain committees
Contracts	zkEVM smart contracts • PolygonZkEVM (main rollup contract) • PolygonZkEVMBridge • PolygonZkEVMGlobalExitRoot	Validium-specific DAC contract • CDKDataCommittee.sol • CDKValidium.sol
Infrastructure	Standard infrastructure	Dedicated infrastructure for data availability layer and DACs
Security	High security due to on-chain data availability and zero-knowledge proofs.	Off-chain data availability can affect security if the sequencer goes offline or if DAC members collude to withhold state data.

	Rollup	Validium
Tx flow	All transaction data is published on L1	Validium only publishes the hash of the transaction data to L1. The sequencer sends both the hash and the transaction data to the DAC for verification. Once approved, the hash+signatures are sent to the Consensus L1 contract of the validium protocol.
Gas fees	High, because all transaction data is stored on Ethereum.	Low, because only the hash of the transaction data is stored on Ethereum.
Proof generation	Uses Prover to generate proofs of batched transactions for validation.	Uses Prover to generate proofs of batched transactions for validation.
Final settlement	Transaction batches and their corresponding proofs are added to the Ethereum state	The hash of transaction data and its proof are added to the Ethereum state, referred to as the consolidated state

Why we prefer Validium over Rollup?

One of our core offerings will be micropayments, which necessitate affordable and fast transaction fees for users. While rollups provide a high level of security, we believe that Validium's architecture is better suited for our micropayment use case. Validium offers a balance between security and scalability, allowing for rapid transaction processing at a fraction of the cost compared to traditional layer 1 solutions.

Conclusion

Laxce represents a pivotal advancement in bridging the chasm between traditional finance and decentralized technologies, by tackling the scalability, latency, and regulatory hurdles inherent in RWA tokenization, Laxce endeavors to unlock novel avenues for innovation and economic expansion.

Reference

https://docs.polygon.technology/cdk/overview/

www.laxce.com