Arbitrum Blog Posts

URL: https://blog.arbitrum.io/fluid-a-defi-stack-that-just-works/

# Fluid: A DeFi Stack That Just Works

Instadapp is quietly powering one of the most efficient and capital-optimized DeFi experiences on the blockchain today. Whether through smart lending or trading, Instadapp’s latest product, Fluid, is quickly becoming a liquidity layer that is doing a lot more than just aggregating yield.

When Instadapp launched in 2018, it had one simple goal: to make DeFi easier for everyday users. At the time, navigating between different DeFi protocols wasn’t an easy task and the user experience was clunky and risky, far from being intuitive. Instadapp saw this opportunity, and created an elegant and unified interface to streamline these protocols.

As time went on, another challenge came to the light, they realized that a polished front-end wasn’t enough to create the most optimized user experience. Building on the back of other protocols meant accepting their limitations whether it was capital efficiency, user experience or control. In order to build something truly efficient and seamless, they needed to start from scratch. So, they did.

Instadapp launched Fluid in early 2024. Fluid isn’t just a protocol that users simply plug into. It’s a unified system where lending, trading, borrowing and other DeFi activities can operate on shared logic and liquidity.

## How Fluid Makes DeFi More Efficient

Fluid is designed so that money can flow more efficiently on the blockchain. Since its launch, it has attractednearly $2 billionin collateral deposited, all achieved without flashy incentives.

As mentioned earlier, the DeFi space is rather segregated, with trading occurring in one corner and lending happening in another. Capital oftentimes either ends up backing a loan, or used to provide liquidity leading to idle assets and fragmented yield.

Fluid addresses this issue by treating liquidity as a shared resource. When users borrow using Fluid, their funds aren't just sitting idly in their wallets. Instead, their funds earn trading fees. This is referred to on Fluid’s platform as “Smart Debt,” where borrowed assets earn trading fees, which ultimately reduces the overall cost of borrowing in real time.

Similarly for lenders, their collateral won’t just be locked away waiting for repayment. Fluid allows its users to supply LP tokens from its DEX as collateral, allowing them to earn additional yield. This is referred to on Fluid’s platform as “Smart Collateral.”

In addition to these benefits, Fluid’s responsive range-based liquidation engine offers liquidation thresholds which are as high as 97%, and liquidation penalties as low as 0.1%. Making it one of the most user-friendly lending terms available in DeFi today.

### Working with Arbitrum

When Fluid decided it was time to branch out beyond Ethereum, Arbitrum was its first stop. This was because the chain has been defined over time by real usage. Arbitrum’s growth has been driven by organic DeFi adoption, its technology allowed Fluid to shine, offering high-throughput, low fees and genuine user demand.

## What’s Next for Fluid?

Fluid’s DEX V2 is planning to launch later this year, offering additional DEX deployments that are permissionless and customizable. This includes:

* Modular AMM logic
* Adjustable fee structures
* Native integrations
* Hook support and oracle access

URL: https://blog.arbitrum.io/rho-on-arbitrum-bringing-interest-rate-derivatives-onchain/

# Rho on Arbitrum: Bringing Interest Rate Derivatives Onchain

If you’ve dabbled in the world of traditional finance, you would know that at its very core are interest rates. From treasury bonds to corporate loans and mortgages, the cost of capital flows through rates. But in crypto, interest rates are still an emerging asset class. Funding rates, staking yields, and protocol-native APRs scattered across ecosystems, underused and rarely accessible for real trading.

That’s what Rho is fixing.

## What Is Rho?

Rho Protocol is a new market designed to make crypto interest rates derivatives tradable onchain. Rather than speculating on token prices, traders on Rho can take positions on the rates themselves, like the funding rate of BTC perps or the staking yield of ETH.

Each product is a futures contract. It tracks a rate and has a fixed maturity. In fact, Rho is the first venue where you can trade:

* BTC and ETH funding rates from major CEXs like Binance, OKX, and Bybit
* ETH staking yields via the CESR (Composite Ether Staking Rate)

All live on Arbitrum. Rho is accelerating Arbitrum Everywhere with this unique twist on DeFi.

## Why Interest Rate Trading Matters

In traditional markets, interest rate derivatives are among the most liquid and systemically important tools in finance. They power everything from risk management to macro positioning.

But crypto didn’t have that…well, at least not before Rho came into existence.

From the outside, funding rates are just a fee, and staking yields are just passive income, but these seemingly insignificant percentages are actually signals about the market’s cost of capital. And before the launch of Rho, there hadn’t been an easy way to trade or hedge them directly.

By turning rates into tradable futures, Rho unlocks a deeper layer in the crypto economy, one where capital can be moved based on funding pressure, yield changes, or macro rate shifts. It’s the foundation for more sophisticated strategies, both delta-neutral yield and directional macro plays.

In addition to its core trading platform, Rho also offers Vaults, which are automated products that bring rates yield exposure passively to users.

They’re designed to make crypto yield more accessible and help users deploy liquidity across rates strategies with one click.

## Powered by Arbitrum

Rho is fully deployed on Arbitrum, leveraging the platform's low fees, high speed, and seamless composability. With Arbitrum’s thriving DeFi ecosystem, Rho plugs directly into broader yield flows by bridging passive yield, active rate speculation and hedging.

Deposits are supported from any chain via Squid and Axelar, making onboarding simple and efficient.

## Join the Race: Rho’s Trading Competition Is Live

To celebrate its growth on Arbitrum, Rho has launched a month-longTrading Racewith $10,000 in stablecoin prizes and up to 30,000 Rho Points on the line.

There’s no need to win trades, just trade actively based on notional volume. Whether you’re a passive LP or a directional trader, you can participate.

## Looking Ahead

As crypto matures, interest rates will play a bigger role in shaping capital flows, risk pricing, and product design. Rho is building the rails for this, turning fragmented yield benchmarks into a unified, tradable layer of crypto finance.

URL: https://blog.arbitrum.io/robinhood-is-realizing-the-crypto-vision/

# Robinhood is realizing the crypto vision

## I've been building for today for over a decade

When I first encountered smart contracts in 2013, I was immediately fascinated by the technology. At that point, I didn't yet dream of the new crypto-native verticals that would emerge; but it was the idea ofrebuildingtheexistingsystem that drew me in. Smart contracts could replace trusted systems with trustless systems, redefine interpersonal interactions, and ultimately provide new, open, more efficient, and more accessible rails to build the world's financial system. We set out to build Arbitrum because we understood that we'd need a multilayer design to meet the massive global demand that would emerge.

Robinhood's launch on Arbitrum today is exactly the future that I envisioned. Today's announcement isn't about a traditional financial institution supporting crypto assets. That's old news, and indeed Robinhood itself has long supported trading crypto on the platform. Today's announcement is so much bigger.Robinhood isn't just supporting crypto; crypto is supporting Robinhood.Robinhood is utilizing Arbitrum's technology to grow its core business, expand into new markets, and offer EU customers a trading experience that's on par with the one U.S. users know and love. The only difference is that these new frontiers will be fully powered by crypto.

Robinhood is the first major fintech company to fully leverage the power of crypto not as an asset, but as a core technology stack that is the next evolution of finance. On aCNBC interview last week, Robinhood CEO Vlad Tenev elegantly laid out these two different roles of crypto in a segment that highlighted just how forward thinking Robinhood is in its embrace of crypto:

"Crypto itself – there are two ways to look at it. One, as a tradeable asset...the other is as a fundamental underlying technology. And in the second lens, it's the next stage of evolution. We've gone from paper and pencil, filing cabinet-based financial services to mainframe, to on-premise and more recently, cloud. Now crypto is the next stage of that....In the future, crypto technology will power trading and all sorts of financial services...so the two will fully merge and I think Robinhood will play a big role in that."

As Vlad so clearly lays out, Crypto is not just as an asset but a technology stack that can be utilized to completely rebuild and revolutionize the current system.

## It's not DeFi and TradFi; it's just Fi

For too long, people have viewed DeFi and TradFi as two separate systems, but this approach lacks ambition. Crypto is not some alternative system. Crypto is the evolution of the current system and quite literally the future of finance. Looking forward 5 years, it won't be DeFi and TradFi; it will just be Fi, and crypto will be front and center. Today's news is a pivotal moment towards realizing that future, and not surprisingly, Robinhood is leading the way.

## Crypto in the background

I've long said that, ironic as it may seem, Arbitrum's success will be measured by its ability to fade a bit into the background. We won't be able to go mainstream if every user has to manage keys, connect to RPCs, and read block explorers. Self custody is a killer feature of crypto but crypto also has to be accessible to those who don't want or don't have the ability to manage those details.

Today's announcement is a complete embodiment of that. Robinhood is utilizing Arbitrum technology to bring its flagship product to European markets. EU users will enjoy the familiar, beloved and seamless Robinhood experience in the Robinhood App. Crypto is doing lots of the heavy lifting and powering this experience, but in a way that's largely abstracted away from the user. Robinhood is directly integrating Arbitrum technology into its retail mobile app in a way that will be accessible and familiar to all users, whether they are crypto-native or not.

## Aligned values

I've long admired Robinhood, the amazing products and community that Vlad and the team have built, and their relentless commitment to democratizing finance for all, a mission that aligns deeply with the core values of Arbitrum. Arbitrum has always been about accessibility.  Accessibility by removing the barrier to entry and enabling builders to build financial primitives that would be impossible for them to launch in the traditional system. Accessibility by lowering trading fees and making onchain finance accessible to all, not just whales. Accessibility by giving financial tools and access to people anywhere in the world and of all socio-economic statuses. And today, accessibility by supporting Robinhood in democratizing finance globally.

It's no surprise that Robinhood is once again ahead of the curve and leading the charge for the next generation of crypto-powered finance, and I could not be more excited to be working alongside them in expanding the reach of crypto and taking a big leap towards both democratizing finance for all and realizing the vision of Arbitrum Everywhere.

As I think back to my earliest encounters to smart contracts over a decade ago, I'm humbled and honored to have contributed to the future where the world's financial system is finally being rebuilt on blockchain technology. And given our long term commitment to accessibility, it's poetic to me that we're doing this alongside Robinhood, a company which has long been committed to democratizing finance for all.

URL: https://blog.arbitrum.io/rho-brings-interest-rate-derivatives-to-defi-on-arbitrum-one-swap-at-a-time/

# Rho Brings Interest Rate Derivatives to DeFi on Arbitrum, One Swap at a Time

When thinking about DeFi, it’s likely that the mind may think about fast-moving, 24-hour markets, or maybe even meme coins. Where the mind probably doesn’t go is “interest rate swaps” a building block to bringing DeFi into mainstream spotlights. And that is exactly what Rho is building.

Rho is built on Arbitrum, and launched in 2022, around the time of the crypto bear market. The purpose of Rho is to reimagine traditional finance’s most essential instruments: fixed-for-floating interest rate swaps, with a DeFi twist.

Why Do Interest Rate Swaps Matter for DeFi Anyway?

If we look into the world of traditional finance, we’ll realize that interest rate swaps are kind of a huge deal. We’re talking about a$700 trillionmarket in notional outstanding. These swaps allow institutions to manage the cost of borrowing, hedge exposure to rate changes and take speculative positions on where rates are heading.

In many ways the crypto space also reflects the world of traditional finance. Rates are everywhere. Borrowing and lending on DeFi platforms require rates, staking yields require rates, and perpetual futures funding also requires rates. These rates are often volatile, sometimes within reason, other times unpredictable.

Rho’s founder, Alex Ryvkin, noticed this. Ryvkin, formerly a structured products trader, realized that DeFi was missing one of TradFi’s most essential tools: interest rate swaps. With institutional investors entering the space and rate volatility rising, he built Rho to bring appropriate risk management to cryptonative markets.

Rho’s products allow users to trade interest rate derivatives with cryptonative rates. This includes perp funding or staking APYs for example, and provides users with a new way to lock in returns, hedge volatility and speculate on future rate movements, opening up a new dimension for DeFi strategy.

Building on Arbitrum

Launching on Arbitrum wasn’t just a technical decision according to Ryvkin, it was also a decision that made most strategic sense. With a thriving DeFi ecosystem, strong developer support and low-cost, high throughput infrastructure, Arbitrum offered the most ideal environment for building complex financial instruments such as rate swaps.

“We looked at DeFi activity across the networks, and Arbitrum was a no-brainer,” Ryvkin said. “It had the most traction in DeFi, the best primitives and is the kind of ecosystem where rate products could actually thrive.”

Since launch, Rho has steadily grown its user base and product offerings. According to the Rho blog, as of March 2025, Rho had a notional trading volume of$10 billion, suggesting that crypto users are very aware of the importance of rate risk. With more institutions and sophisticated traders entering the market, Rho’s tools become an essential part of the landscape.

What’s Next for Rho?

Interest rate swaps may not seem to be the most flashy product in crypto, but they are an essential tool that makes DeFi work better, making Rho a team to keep your eyes on.

Looking forward, Rho is planning to expand its product suite to offer more tooling for traders and hedgers, and deeper integrations across DeFi. There are also plans to support more chains, offer improved analytics, and work with protocols that want to manage exposure natively.

URL: https://blog.arbitrum.io/gtrade-on-arbitrum-a-new-era-for-onchain-trading/

# gTrade on Arbitrum: A New Era for Onchain Trading

Another week into Arbitrum's Chain Reaction campaign, we're turning the spotlight ongTrade: one of the most innovative and complete perpetual futures trading platforms in the ecosystem. With a major protocol upgrade around the corner, a wave of new markets going live, and a 2025 roadmap that aims to push the boundaries of onchain leverage, there's never been a better time to discover what gTrade has to offer.

### Okay, So what is gTrade?

gTrade is a decentralized perpetual futures trading platform designed for traders who demand speed, precision, and variety. Built with a vault model and a decentralized oracle network for highly accurate spot pricing, gTrade enables non-custodial, capital-efficient trading across an expansive range of markets.

With over 270 tradable pairs, gTrade covers:

* Crypto
* Forex
* Commodities
* Stocks
* Indices

Trade any of gTrade’s 270+ pairs. Source:gTrade

Whether you want to long or short tech stocks, trade forex on tariff headlines, or ride the volatility of memecoins, gTrade offers the broadest market access of any PerpDEX on Arbitrum. There's no need to leave the ecosystem because everything a trader needs is already here.

For those of you just looking for a simple list, here are some of gTrade’s key advantages:

* Minimal price impact or slippage on majors
* Deep liquidity without fragmented order books
* Fast execution without front-running
* Transparent fee model
* Spot-based pricing powered by decentralized oracles

### Keep your eyes peeled: gTrade v10 is on its way

Shortly following Chain Reaction week, gTrade v10 will launch. But this isn’t just any minor launch, it will be the most significant protocol upgrade of 2025. Why? This new upgrade will introduceOI Hedging, a long-awaited feature that eliminates friction for longer-term traders and unlocks a 10x leap in scalable open interest. This means that traders will be able to deploy a wider range of strategies including high-leverage directional plays, delta-neutral setups, and more. Liquidity will also deepen, allowing for greater user retention and improved trading conditions.

To celebrate this launch, gTrade will be kicking off a$200,000 trading competitionand severalcampaignsdesigned to reward and attract traders to the platform. These efforts will create an exciting on-ramp into the new era of trading on gTrade.

This next chapter positions gTrade astheone-stop shop for perpetual trading across all markets, from crypto-native assets to real-world financial instruments.

### Why Arbitrum is gTrade’s Home

Since expanding from Polygon inDecember 2022, gTrade has found true product-market fit on Arbitrum. Today, themajority of gTrade’s TVL and daily volumelive here, making Arbitrum the protocol’s core ecosystem.

But this isn’t just a deployment, it’s a long-term alignment:

* Upcoming OI unificationwill consolidate liquidity across chains with Arbitrum at the center
* Arbitrum’s speed, low fees, and deep liquidity make it the ideal home for gTrade’s growing user base

Arbitrum dominating gTrade’s volume. Source:Dune

### This Week Only: 30% Fee Reduction on RWAs

To celebrate gTrade's participation in the Chain Reaction campaign, traders on Arbitrum will enjoy a30% fee discountacross allRWA pairs,this includes:

* Stocks
* Indices
* Commodities
* Forex

This discount will be liveexclusively during the week of June 23, as a thanks to the Arbitrum ecosystem and a spotlight on one of gTrade’s most unique offerings.

Throughout the week, gTrade will also be listingnew RWA markets daily, including:

* High-demand stocks
* Volatility indices like BVIV and EVIV, and
* Select commodities like WTI

With deep liquidity, fast execution, and minimal slippage, RWA trading on gTrade is a native experience, no need to leave Arbitrum.

One Platform. Every Market.

### How to Get Started

Trade where it matters. Discover gTrade on Arbitrum.

Ready to experience gTrade?

* Watch this tutorialhttps://www.youtube.com/watch?v=3V4W50YX8bMand visithttps://gains.trade/trading#BTC-USDto start trading.

Need extra perks?

* Apply forgTrade Creditsto reduce fees
* Join thePrime Trader programfor tailored benefits

### What's Next for gTrade in 2025

The upcoming v10 release is just the beginning. gTrade is on a mission to become themost scalable, permissionless, and user-first alternative to CEXs.

Learn more about gTrade’s future in the full roadmap breakdownhere.

URL: https://blog.arbitrum.io/gmx-an-in-depth-look-at-arbitrums-leading-permissionless-exchange-for-on-chain-leverage-trading/

# GMX: An In-Depth Look at Arbitrum’s Leading Permissionless Exchange for On-Chain Leverage Trading

Looking to trade crypto perpetual swaps, without giving up custody or security? GMX is the leading onchain platform making that possible across multiple blockchains — all while keeping the user experience intuitive and accessible.

In this guide, we’ll unpack what makes GMX’s non-custodial onchain exchange unique, how it works, and why it continues to gain traction among traders, liquidity providers, and DeFi enthusiasts alike.

## 1. What is GMX?

GMX is a popular decentralised exchange (DEX) that allows you to trade BTC, ETH, SOL, ARB, and over 70 other top cryptocurrencies directly from your own crypto wallet.The renowned onchain exchange has been live since 2021, has thousands of daily users, and generates significant revenue, which is shared with GMX stakers and anyone who provides liquidity on GMX.

Unlike centralized exchanges, GMX is non-custodial, permissionless, composable, and data transparent.That means:

* No account registration or KYC
* No depositing needed; your assets stay in your wallet
* Other crypto projects can build on top of GMX’s robust DeFi foundation
* And token pricing, trade volume, liquidity depth, and other important market data are all transparently visible on-chain

GMXhas been live on Arbitrum One since 2021, facilitating nearly 300 billion in trading volume. The Perpetual DEX launched simultaneously with Arbitrum's Mainnet, as the fast, low-fee, high-throughput blockchain is ideally suited to on-chain trading. GMX is now further expanding with ‘GMX Multichain’, which will allow frictionless trading from other Ethereum-based blockchains directly on its Arbitrum platform.

## 2. Getting Started with GMX

You only need an Ethereum-compatible wallet (such as Rabby, MetaMask, Trust Wallet, Coinbase Wallet, or any WalletConnect-supported wallet). Then:

* Head togmx.io
* Press the ‘Connect Wallet’ button
* Select the Arbitrum network
* Bridge funds to that network, if needed.(You can deposit to your wallet from a centralised exchange,buy tokens directly, or bridge viaBungee, for example)
* Start trading, staking, or providing liquidity viaapp.gmx.io

Setup takes less than a minute, and you’re in complete control throughout. For detailed guides, skip ahead to section 7.

## 3. How Does GMX Work?

GMX V2 is built around unique liquidity pools, known as GM pools, and liquidity vaults, called GLV. Each GM pool backs a single market on GMX. The GLV vaults are yield-optimising vaults that back multiple markets.

Here's how the system works:

* Traders use the liquidity in the GM pools to open leveraged positions or perform spot swaps
* Liquidity Providers earn rewards by supplying crypto assets to GM or GLV
* Stakers of the GMX token earn protocol fees as rewards

Key GMX Features:

* More than 70 tokens available for trading
* Seamless Perpetual swaps
* Spot swaps with low fees
* Minimal spreads
* Chainlink oracles for real-time, manipulation-resistant token pricing
* Self-custody: You stay in control of your assets

## 4. The GMX Token Explained

The GMX token powers governance and earns rewards. By staking your GMX, you earn a portion ofall the fees the protocol generates: a significant share. These rewards are also paid out in GMX tokens, allowing you to compound your earnings and maximise returns easily. All the GMX tokens distributed to stakers are first bought on the open market, creating a flywheel effect.

Over 63% of the circulating supply is currently staked to earn rewards.

To stake, head toapp.gmx.io/#/earn, connect your wallet, and start earning passively.

📊 Token Stats as of May 2025:

## 5. What Sets GMX Apart?

1. Deep On-Chain Liquidity

GMX’s liquidity pools hold 300 to 400 million USD in assets, enabling massive trades with minimal spreads or slippage, regardless of trade size. The exchange relies on decentralised Chainlink oracles for the pricing of its traded assets, making all that liquidity directly available at the current index price: a unique selling point.

This unique feature is one of the main contrasts with exchanges based on Order Books, where large trades inevitably face slippage. There are even single-sided liquidity pools for BTC/USD and ETH/USD on GMX that ensure traders enjoy zero price impact.

2. Self-Custody & Transparency

GMX is permissionless. No centralised party holds your funds, as no depositing is required. All transactions are done directly from your self-custody wallet.

Additionally, all exchange data is transparently visible onchain. For example, you can look atapp.gmx.io/#/dashboardor thegranular GMX Analytics dashboard on Dune.comfor a live snapshot of exchange reserves, user data, market data, and more.

3. Battle-tested Security

The decentralised GMX exchange has been live since September 2021, has facilitated over $290 billion in volume from more than 800,000 traders, and has built a reputation for reliability.

Multiple professional security partners have thoroughly audited all the DEX’s smart contracts. Moreover, one of the highest bug bounties ever,  valued at up to 5 million USD,  isavailable on security platform Immunefifor anyone who finds a critical bug in the GMX protocol.

4. Efficient Dual Trading Modes

Both perpetual swaps (futures without expiry) and spot swaps are supported, all within an intuitive, unified interface. GMX also enables traders to utilise high leverage on 70+ tokens if preferred, allowing for greater capital efficiency and minimising counterparty risk.

5. Market-leading returns for LPs

Liquidity providers (LPs) on GMX have historically been quite successful. The GM pools of GMX V2 generallyoutperform benchmark LP positionsand show robust long-term returns. Important factors are that the DEX generates a lot of fees, and liquidity providers face less impermanent loss — a common risk on DeFi platforms like Uniswap.

Users can customize their exposure according to their risk preferences, by utilising GMX’s isolated GM liquidity pools. LPs can also provide liquidity through the GLV liquidity vaults, a simplified set-and-forget solution.

## 6. The GMX Ecosystem

GMX has fostered a community-led, builder-focused ecosystem over the last 4+ years. As a result, the protocol now forms a crucial liquidity baselayer for the multichain DeFi ecosystem on Arbitrum.

Thanks to its composable, high-yield liquidity pools, performant trading system, and grants program, more than 80 other protocols have built on top of its DeFi foundations.

Visitapp.gmx.io/#/ecosystemto explore all the integrations and community projects.

## 7. How to Use GMX

💹Trading:

Go toapp.gmx.io/#/trade

* Select Long or Short (or use Swap for basic Spot trades)
* Choose your collateral and token to trade
* Adjust your leverage
* Set a stop-loss / take-profit if needed
* Click the blue button, and confirm the onchain transaction

You’ll see your open positions under “Positions,” where you can edit collateral, view PnL, or close trades.

### 💧Providing Liquidity (with GM & GLV):

Do you want to earn rewards by providing liquidity for a specific asset?

* Mint GM on the Pools pageusing any supported token, and earn 63% of all trading fees from that isolated liquidity pool.

Do you want to earn rewards as a liquidity provider (LP) without worrying too much about your exact asset exposure, while increasing your capital efficiency?

* Mint GLV on the Pools pageusing any supported token, and earn 63% of trading fees from all the markets supported by that GMX Liquidity Vault.

GLV offers a straightforward way to provide liquidity on GMX. The GLV vault dynamically allocates its liquidity to GM pools based on their utilisation and demand. This mechanism ensures liquidity flows to the markets that need it most, providing traders with the deep liquidity they need while offering LPs higher capital efficiency.

### Visitthe detailed Analytics Dashboard for GMX LPsto see how the liquidity pools outperform common benchmark LP positions.

## 8. What’s Next for GMX?

The GMX DAO has ambitious plans for the protocol. Starting in 2025, new developers, UX specialists, and UI designers have begun contributing to the project. Together, these builders are working on:

* GMX Express– Thisbig tech upgradeintroduced gas abstraction and a remedy for blockchain congestion issues, creating a fast, frictionless and interruption-free onchain trading experience. It was successfully launched in June 2025
* GMX Multichain– GMX will be expanding its offerings to additional blockchains, while keeping liquidity unified. Trade and provide liquidity seamlessly on GMX on Arbitrum from any popular EVM blockchain
* UI/UX Upgrades– Continuous interface and design improvements to further streamline the user experience
* GMX V2.3–Cross-collateral support, Cross-Margin, additional trading fee and price impact decreases, hyper-scaling GMX’s liquidity and Open Interest capacity, and much more

## 9. Final Thoughts

GMX is fast becoming the gold standard for decentralised, non-custodial on-chain leverage trading. It offers:

* Deep liquidity
* Intuitive trading
* High-yield opportunities
* Community-driven innovation

Whether you're a trader, yield farmer, or DeFi builder, GMX delivers on performance, fairness, and long-term vision.

Ready to take control of your crypto trading? Get started with GMX on Arbitrum now and experience lightning-fast, permissionless onchain leverage trading: 🔗app.gmx.io/#/trade

URL: https://blog.arbitrum.io/rwas-on-arbitrum-2/

# RWAs on Arbitrum

If you’re a subscriber to theArbitrum Monthly Newsletter, you may already be aware that real-world assets (RWAs) recently reached anall-time highon Arbitrum. In fact, the number of tokenized RWAs onchain continues to increase, which shows that Arbitrum is one of the leading L2s in bringing these types of assets onto Ethereum.

So, what are RWAs, anyway? In the crypto world, RWAs refer to tokenized traditional or physical financial assets. These include but are not limited to currencies, bonds, stocks, real estate, invoices, and gold. A legal entity often owns these assets and issues a digital token representing its ownership. These tokens are programmable and can be used in DeFi protocols for various purposes.

Here’s a quick rundown of some of the prominent RWA projects on Arbitrum.

## The Institutional Giants

BlackRock:BlackRock’s tokenizedBUIDL fundallows select investors to tap into short-term, low-risk US dollar Treasury yields via Securitize.

Franklin Templeton:Franklin Templeton was one of the first traditional asset managers to go onchain. Its mobile app, Benji Investments, allows users to access the asset management firm’s Onchain US Government Money Fund (FOXBB).

Wisdom Tree:WisdomTree launched WisdomTree Connect, which offers onchain investors access to 13 tokenized funds, exposing them to asset classes including money market instruments, equities, fixed income and asset allocation strategies.

Wellington Management:Wellington Management collaborated with FundBridge Capital and Libeara to launch the Delta Wellington Ultra Short Treasury On-Chain Fund (ULTRA Fund), which invests in short-duration US Treasury securities, repos, reverse repos, and cash reserves.

## Tokenized Yield and Treasuries

Ondo Finance:Ondo Finance tokenizes US treasuries and allows investors to tap into real-world yield strategies. Its USDY is a Yield Bearing, permissionless stablecoin which is backed by US Treasuries and returns that yield to the user.

OpenEden:OpenEden brings tokenized US Treasury bills onto the blockchain with real-time proof of reserves. Its primary product is the TBILL, a token fully backed by short-term Treasuries and custodied by a licensed third party.

Spiko:Paris-based Spiko primarily offers tokenized money market funds (MMFs). One of its most popular MMFs is the Euro T-Bill (EUTBL). Their U.S. T-bill (USTBL) is also seeing rapid adoption among Web2 and Web3 startups across Europe, APAC, Africa, and LATAM.

## Real Estate and Alternative Assets

Estate Protocol:Estate Protocol is building a real estate marketplace on the blockchain. Its primary focus is turning residential and commercial properties into liquid, tradable tokens.

Libre:Libre tokenizes alternative assets, including private credit, hedge funds, and real estate. It has partnered with institutions such as Brevan Howard and Hamilton Lane.

## Equities and Private Credit

Backed:Backed issues tokenized versions of traditional ETFs and stocks. Users can buy ERC-20 tokens representing ETFs such as the S&P 500 and Nasdaq.

Berry Investing:Berry primarily focuses on tokenizing stocks, ETFs, and money market funds. It allows users to own shares fractionally through the blockchain.

Centrifuge:Centrifuge is a DeFi veteran that brings real-world credit onto the blockchain via liquidity pools. Businesses can finance assets through tokenized debt pools.

Dinari:Dinari tokenizes real-world equities and allows users to buy fractional shares of publicly traded companies backed by 1:1 custodial holdings.

DigiFT:A regulated exchange for tokenized securities that offers primary issuance and secondary trading. The Singapore-based exchange collaborated with Invesco to tokenize its U.S. Senior Loan Strategy fund (the iSNR token).

## DeFi Native

Gains Network:A synthetic trading platform that enables users to long or short various assets, including crypto, forex, commodities and real-world price feeds.

Ostium: Ositum is aprotocol that allows minting synthetic assets backed by real-world asset collateral, such as tokenized Treasuries and stablecoins.

Disclaimer. The references and information regarding each project and their respective offerings are provided solely for informational purposes. This article is not, and should not be construed as, an endorsement or recommendation of any of such projects nor their offerings.

URL: https://blog.arbitrum.io/start-yapping-on-arbitrum-everywhere/

# Start Yapping on Arbitrum Everywhere

Arbinaut’s unite! It’s time to start yapping on Arbitrum… everywhere.

Update (July 11th 2025):Based on the incredible participation and enthusiasm from the community, the ARB grants pool has been increased from 400,000 to 514,000 ARB! This expansion allows us to extend the leaderboard grants to the Top 100 Yappers. The additional 114,000 ARB will be distributed to positions 51–100 during the same campaign period, from May 27th to September 1st, 2025. This update will apply retroactively from the start of the campaign.

Calling on you, Arbitrum’s community of researchers, developers, and enthusiasts, to join a new community-led campaign, where you will have the opportunity to compete for a share in a 514,000 ARB grants pool (increased from 400,000 ARB).

The brand newArbitrum Mindshare Leaderboard, will be the driving force that propels this campaign, serving as a ranking system to determine who the most committed Arbitrum yappers are from the community.

Yes, you can now yap your way to the top of Arbitrum mindshare, and receive a grant for it.

How Does the Competition Work?

The primary goal of the campaign is to yap (tweet) your way into the Top 100 (previously Top 50) of the Arbitrum leaderboard. The campaign will last for a total of three months, in which ARB grants will be distributed by Kaito to community members who managed to land in the Top 100 (previously Top 50) by the deadline at the end of each month.

Monthly ARB grants will be distributed as follows:

* May 27th-June 30th: 164,288.66 ARB ( with 126,288.66 ARB distributed to top 50)
* July 1st-31st: 149,855.67 ARB (with 111,855.67 ARB distributed to top 50)
* August 1st-31st: 149,855.67 ARB (with 111,855.67 ARB distributed to top 50)
* Non-English Content: 50,000 ARB

Regional Creators

Arbitrum is a global community that extends to all parts of the world. To celebrate the hard work of Arbitrum’s regional creators, 50,000 ARB from the total 514,000 ARB grants pool (increased from 400,000 ARB) will be allocated to non-English creators who make it into the Top 100 (previously Top 50) of the Arbitrum Leaderboard.

Interested?

To find out more, head on over to theKaito website, and sign in. From there, you will be prompted to connect to Kaito Yaps via your X account. This is the most important step, so make sure that you are signed in correctly at the beginning of each day to ensure that your tweets are being counted.

Once you have linked your X account to Kaito, you are ready to start yapping Arbitrum, everywhere.

Most importantly, don’t forget to check your official score on the Arbitrum Leaderboard, which can be tracked daily over athttps://yaps.kaito.ai/arbitrum. For any support related questions, please enquire directly through theKaito Discord server.

Three monthly themes will be introduced, and announced via the @arbitrum X account in the early days of each monthly phase. The first theme will be announced on June 1st – however, until the announcement of our first theme, you are free to start yapping about Arbitrum in any way that you see fit! Content that mentions Arbitrum that are not aligned with the the theme will also be counted toward the leaderboard and rewards. All content published before the theme announcement will still count towards the leaderboard.

Eligible participants can claim their ARB grants directly via Kaito once each monthly distribution period begins.

Accounts affiliated with Arbitrum (such as employees) are not eligible for the Kaito Earn Bounty. If any of these accounts appear in the Top 100 (previously Top 50), they will be excluded from the grants, and the grant will roll down to the next eligible participants to ensure 100 (previously 50) non-affiliated users receive the grant.

Happy yapping, Arbinauts.

Kaito Yapper Rewards Terms shall apply.

URL: https://blog.arbitrum.io/erigon-and-nethermind-join-arbitrum/

# Erigon and Nethermind Join Arbitrum

As Arbitrum scales, so too do the demands on the infrastructure which powers it. Having more apps, more users, and more chains isn’t just about going at faster speeds, though that is very important. It is, as we have noted in ourscaling vision, also about building infrastructure that is flexible, sustainable, able to continuously evolve with Ethereum, and that brings Arbitrum Everywhere.

Today, alongside Nitro (which is based on go-ethereum or Geth), two new client teams, Erigon and Nethermind, will officially start development to support the Arbitrum ecosystem. These new client types will each have their own strengths and benefits. After all, it’s about finding the best ways to scale Arbitrum everywhere.

What are Execution Clients?

Execution Clients (EL) are independent software implementations of the Ethereum Virtual Machine (EVM) that are responsible for taking user transactions, executing them correctly, and appending those state changes to the blockchain ledger.

Similar to how there are different web browsers that allow you to access the same internet, each client implementation can offer varying benefits, with its own optimizations, architecture and features.  Ethereum, for example, began with just one client: go-ethereum (Geth). But as it began to grow, so did the need for different types of clients. This is how Erigon and Nethermind came to be. Built by independent teams with its own unique architectures, offering new optimizations while running Ethereum.

Having multiple implementations can improve decentralization and minimize single point of failure. Up until now, Nitro, which is based on Geth, has been the only client that has been used for running Arbitrum chains. Nitro is fast, reliable, and has carried Arbitrum through many major milestones. But now that Arbitrum has matured, becoming one of the most widely adopted L2s today, the timing is right for additional clients.

These clients strengthen Arbitrum by reducing reliance on a single codebase as mentioned above, subsequently, this helps increase security and also enables additional validation of the chain's behavior. In addition to general security improvements, additional clients can open the door to performance improvements, new developer tools, and a wider range of use cases, including lightweight clients and more scalable infrastructure.

Introducing Nethermind and Erigon

## Nethermind: High Performance, Lower Overhead

For node runners that have ever watched their RPCs lag, or sync times crawl, whilst simultaneously pulling out every last strand of hair from their scalp, well, Nethermind may be the client you need.

Marek Moraczyński, Head of Blockchain Engineering at Nethermind, says: “At Nethermind, our mission has always been to deliver an ultra-performant execution client that is secure, stable, and rigorously tested. This dedication has earned Nethermind a reputation for exceptional block processing speed, fast syncing and the trust of a broad user base. We’re excited to bring these strengths to the Arbitrum ecosystem. By using the Nethermind client as a sequencer, we aim to significantly boost the throughput of Arbitrum chains - ultimately contributing to Ethereum’s broader scalability.”

Nethermind has some key high-performance benefits based on its work with Layer-1 Ethereum:

* Faster Sync Times:Nodes come online much faster, which means reduced downtimes and operational overheads.
* Improved RPC Performance:Handles high-traffic data requests efficiently, making it ideal for applications that have demanding workloads. (e.g., fetching balances, checking token prices, and submitting transactions)
* Supports Higher Gas Targets:Built so that it can keep up with increased throughput, without having to update major hardware.
* Optimized for Speed:Designed to operate with top-tier performance with minimal latency.

The Nethermind team maintains arelentless focus on performance - continuallyexperimenting with performance benchmarks to surface insights that improve the client.. Given these results on Ethereum, it’s easy to imagine the potential value Nethermind could bring to Arbitrum as well.

## Erigon: Making Storage Much More Efficient

Most people know that running nodes is expensive, mainly because of its storage requirements, which require storage of sometimes terabytes of data…not exactly accessible for the everyday person. But fret not, with Erigon, this barrier to entry will exist no longer.

Giulio Rebuffo, CTO at Erigon, says “Our mission has always been to push the boundaries of Ethereum scalability and efficiency. We’ve worked tirelessly to optimize our archive nodes, delivering a 3x improvement in disk efficiency and RPC performance over our previous iterations, and a 25x improvement in both metrics compared to Geth. Doing this on Arbitrum aligns perfectly with this vision. By integrating Erigon's high-performance execution capabilities with Arbitrum's innovative Layer 2 solutions, we're setting new standards for throughput, cost-effectiveness, and decentralization.”

Here are some key benefits of choosing Erigon:

* Radical Storage Reduction:Based on its work with L1’s, Erigon can reduce disk space by up to80%, when compared to traditional archival nodes.
* Accessible Infrastructure:Perfect for smaller teams, individuals or regional providers, allowing them to run full archival nodes at a muchmore affordablecost.
* Lower Hardware Costs:Significantlyreduces infrastructure burden, making long-term node operation much more sustainable.
* Decentralization Friendly:Allows for broader participation in the network by reducing financial barriers

Same amount of data, way smaller footprint. Lower cost.

Let’s Build a Stronger Arbitrum, Together

Having Nethermind and Erigon help author the next chapters of the Arbitrum story unlocks significant performance improvements and cost reductions, but more importantly, it’s about building a stronger, more resilient Arbitrum.

With Nitro, Nethermind and Erigon all in the mix, Arbitrum will have real client diversity. This isn’t just another checkbox, but rather a critical step to building a stronger defense system against bugs, downtime and centralized dependencies.

URL: https://blog.arbitrum.io/scaling-arbitrum-everywhere/

# Scaling Arbitrum Everywhere

Scaling has always been about performance. Faster speeds, higher throughput, and lower costs, but these metrics by themselves? Not enough. The actual goal is to build sustainable, open infrastructure that can stand the test of time. Think of it less like upgrading a part of your car to make it more fuel-efficient, and more like a collective effort to redesign the entire transportation system to one that’s more sustainable, effective, and accessible to everyone. A global system built to scale Arbitrum everywhere.

Here’s the thing that needs to be emphasized: scaling isn’t just a finish line that is crossed and forgotten about. Arbitrum will likely be talking about scaling years down the road. But for now, we’re going to share what is to come in the near future.

So, how does one go about all of this? Today, three key scaling pillars guide decision-making around scaling: Performance, Unification and Decentralization. These three pillars often pull against each other; it’s easy to move one forward if you’re willing to sacrifice the others. Luckily, this isn’t a zero-sum game. We’re not choosing between performance at the cost of decentralization, or vice versa - we’re building a future where you don’t have to make that trade at all. Real scaling means refusing the easy path and pushing these scaling pillars forward at the same time, even when they naturally pull in opposite directions.

There are three core pillars that we focus on when it comes to scaling, and our goal is to continue to make progress on each of them without compromising on one of the others to do so. This post will set the stage for more focused deep dives to come over the coming weeks into the steps we're taking to scale along each of these dimensions

## Performance

The long-term target for performance is to increase the throughput of Arbitrum applications by 100x. This will allow any application building on Arbitrum to handle larger volumes and become dramatically more performant and capable.

As systems evolve, so does the relationship between usage performance and costs. Ultimately, the goal is to increase activity, opportunities, use cases, etc, at a lower price without compromising fundamental blockchain values.

## Unification

As new apps and use cases emerge in the ecosystem, users should not need to consider which chain to use. Interacting across chains, whether on Arbitrum One, Nova, other Arbitrum chains, or even a chain from another ecosystem, must feel seamless, fast, and intuitive. The purpose is to build a world where interacting across its ecosystems feels like a continuous experience.

Many unification goals have been previously outlined in Offchain Lab’sinteroperability roadmap, which include:

* Introducing intent-based interoperability that will enable cross-chain swaps in under three seconds.
* Enabling trustless bridging between L1s, L2s and L3s, minimizing user risk.
* Standardizing messaging and establishing compatibility with various EVM standards
* Utilizing core VM changes like EIP-7702 and account abstraction to simplify crosschain actions into a single, intuitive signature flow.
* WithFast Withdrawalsalready in use, adopting additional settlement solutions such as native ZK integration can lower latency and user costs.

## Decentralization

Decentralization lies at the core of blockchain technology. Broad access to ecosystem participation is critical regardless of geography or hardware access. The infrastructure that powers Arbitrum should always remain open, resilient, and trustless at scale.

Builders using Arbitrum technology should be able to tune deployments to fit their needs, configure their chain to find the right balance between costs and performance, and cater to their communities and infrastructure partners.

Building Towards Scaling Goals

Now that the scaling pillars have been laid out, an important question remains: How will this be achieved? Over the coming weeks, we’ll explore some of the significant initiatives that have helped Arbitrum move the needle forward across these three scaling pillars.

Below are some key areas to expect.

## Alternative Clients

Arbitrum currently runs on Nitro, built on top of Geth, the battle-tested and trusted Ethereum client. But now, the ecosystem is ready to diversify.

Implementing alternative clients will enable:

* Greater fault tolerance.
* Optimized and tailored rollup environments, improving performance and flexibility.
* More decentralized operations.

Work here is already underway, and teams will share updates as new clients are developed and tested.

## Dynamic Pricing

If approved by the Arbitrum DAO, dynamic pricing is another solution to enhance performance without compromising decentralization and unification.

Today, every transaction competes for blockspace in the same way, no matter the transaction. With dynamic pricing, different resource types will be priced independently, significantly reducing congestion and better reflecting actual usage of Arbitrum.

Research and engineering for dynamic pricing is still in its early stages, but additional information will be shared in the coming weeks.

Scaling for the Long-Term

Performance, user experience, and decentralization have always been the foundations of scaling, and these scaling pillars will continue to guide the Arbitrum ecosystem as it grows and evolves.

What’s been outlined here is only the surface layer. This is the first chapter in a much larger scaling story. A lot is happening behind the scenes, and more details on specific strategies and technical decisions will be revealed.

From dynamic pricing mechanics to alt client implementations, Arbitrum will share these updates as they come, so keep an eye out and stay tuned.

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URL: https://blog.arbitrum.io/agent-arena/

# Agent Arena: The Arbitrum Agentic Trading Showdown!

The Arbitrum Foundation is hosting the first-ever Agentic Trading Competition, where five leading AI agent teams will compete head-to-head on the Arbitrum network. This landmark competition showcases the power of DeFAI while reinforcing Arbitrum’s position as the go-to hub for advanced trading applications.

Since the launch ofTruth Terminal, conversations around AI agents and their capabilities have intensified. During last winter's crypto AI agent boom, many teams entered and exited the crypto AI space. But a handful stayed the course, continuing to build through the noise with conviction and focus. Now, it's time to reward these teams with a fun challenge.

Many of these teams claim their trading agents can deliver strong returns without the need for human intervention. And in many cases, they’ve done so successfully. But these teams have never been pitted against each other to see who comes out on top. It's time to find out whichagentrules supreme.

Competition Overview

The rules for the competition are as follows:

* Each agent begins with $10,000 to be traded/managed using any strategies it likes, subject to the rules set forth below. The competing teams keep all the returns from their respective agent’s trading.
* The agent with the highest return at the end of the competition (i.e., the greatest dollar value return from the initial $10,000, as determined by the Arbitrum Foundation) wins the prize pool of $50,000.
* Competition will last 30 days starting May 12 0:00 UTC and ending June 11 0:00 UTC.
* Execution of the trading strategies must comply with applicable law, and must not involve taking any actions alone or in concert with another market participant, which are intended to (1) deceive or mislead other market participants; (2) artificially control or manipulate the price or trading volume of trading assets; (3) aid, abet, enable, finance, support or endorse any of the foregoing activity (i.e. market manipulation),or (4) profit from trading on material non-public information.(i.e. insider trading).
* Teams must not act in concert or collude with one another, or with anyone participating in any prediction markets related to this competition.
* Teams and agent trading strategies must abide by/adhere to the terms of use for any protocol utilized for purposes of the competition.
* All activities must be on-chain so that they are observable (i.e., no CEX/DEX arbitrage).
* The Arbitrum Foundation may disqualify any participant in its sole discretion for violation of any of these rules, or for any other action the Arbitrum Foundation determines to be abusive or otherwise in violation of the purposes of the competition.

Participating TeamsFive of the most advanced AI trading teams are going head-to-head in the Arena. They are:

RoboNet

Powered by theAllora Networkintelligence system,RoboNetcut its teeth trading onPolymarketduring the 2024 election cycle, netting a return of over 60%.

Robonet's plan is to use Allora's price prediction models to gain an edge in BTC and ETH perpetual markets. The Robonet team chose to haveGMXas its venue for trading.

Wallet for tracking: 0x9c0a70239CE4A78a72dbFc5df4D2230A65487dF1

Jenius

TheRNDMteam has launched multiple trading agents to date likeDuduthe Polymarket trader andCathenathe basis trader onHyperliquidX, but Jenius faces the toughest challenge yet.

Jenius is named after RNDM's MCP server for DeFAI tooling and will run a mean reversion driven strategy on the hottest perps dex in town,Ostium.

Wallet for tracking: 0x1607265A81A3E35Ab5058afBfA261534a72a062A

Big Tony

BigTonyXBTfrom theCod3xteam is known for his loyal following and distinct mob boss personality. Tony leverages a combination of technical indicators like RSI, MACD, and Bollinger Bans, alongside Allora's prediction models to time entries and exits. His focus is on ETH, BTC, and other major assets listed onGMX.

Wallet for tracking: 0x0112e5019a0762ee06677927c4348347abbffbb2

Gekko AI

Built by the team atAxaland trained on the cold-blooded character fromWall Street,@Gekko\_Agentuses its innate love of money and all things material to get an edge in markets.

Gekko has the most diverse trading strategy of any of the participants. It will trade around a daily EMA, running pair trades on pre-selected pairs, powered again byAllora Network. It monitors markets and takes the reverse position on forced liquidations, and has a community allocation where community members determine Gekko's trades.

Wallet for tracking: 0x071Fd6ef62D24665E409251Cd37FB62734ECCE2E

Kudai

Perhaps the most Arbitrum native team in the competition,Kudai\_IOwas built and launched as the first agent on theKaigenplatform. Kudai is the brainchild of theGMX Blueberry Club and was the first agent to trade onGMX, possibly giving it home field advantage.

Kudai focuses on leverage trading on GMX, using  strategies based on price action, technical indicators, and a wide range of parameters that allow opening and closing positions fully autonomously.

Wallet for tracking: 0xbBA4eaA534cbD0EcAed5E2fD6036Aec2E7eE309f

Place Your Predictions, The Game Is On

Unlike typical trading competitions that limit the community to spectatorship, this one invites active participation. Place your predictions on the outcome of this competition via the prediction market set up on Clutch by beloved community memberBunny.

May the best agent (and predictooor) win!

URL: https://blog.arbitrum.io/fhenix-private-computation/

# Fhenix: Bringing Private Computation to Web3 with Arbitrum

Fhenix brings encrypted computation to blockchain applications, enabling privacy without compromising decentralization or composability.

Transactions on decentralized blockchains today are public, meaning that anyone can search a user's transaction history and find out exactly how many tokens they hold and what those tokens are. While this radical transparency to date ensures trustlessness, it also limits privacy-critical applications like DeFi, compliance, and sensitive data management.

Without privacy, users and developers face serious limitations when building DeFi applications: private positions can't exist, sensitive data risks exposure, and regulated use cases remain out of reach.

This is where Fhenix steps in.

Encrypted Computation with Fully Homomorphic Encryption (FHE)

At the core of Fhenix’s work is Fully Homomorphic Encryption (FHE). Today, most systems require encrypted data to be decrypted before it can be processed. This means that if you want to check if that data is accurate, you must briefly expose the information inside, posing a privacy risk. FHE enables encrypted data to be computed without the need for decryption. With FHE, data remains encrypted throughout the entire process.

The introduction of FHE unearths a large number of new user cases for the blockchain, including but not limited to: encrypted identity frameworks, private trading and lending in DeFi, privacy-first DAOs and onchain applications that are capable of handling personal or business-sensitive data. It also brings new users, such as institutions, onchain.

Fhenix began its journey with the Fhenix L2, an Arbitrum Nitro-powered rollup designed to secure data availability for encrypted computation. While effective, this rollup was a standalone solution.

Fhenix has since introduced coFHE: an FHE-powered coprocessor that lets developers write privacy-preserving smart contracts using familiar EVM workflows. With just one line of code, inputs, outputs, and logic stay encrypted, and only the data owner can decrypt the results. Built on Arbitrum, coFHE enablescomputations to be fast, secure, and offchain, making privacy accessible todevelopers.

“If you're building on Arbitrum, you can now enable encrypted computation using coFHE  in your app with just a single line of code, something that simply wasn't available until now,” Guy Itzhaki, Fhenix CEO, said.

Why Arbitrum?

When Fhenix first started building, its team actively sought infrastructure to support its long-term goals of bringing FHE technology to life. It needed technology that was fast and reliable, and built for developers.

After evaluating the market, the team decided to work with Arbitrum’s Nitro Stack. Itzhaki explained that the Nitro stack was battle-tested, easy to use, and well documented. Most importantly, though, it was because Arbitrum had a fully functional fraud-proof system that could support encrypted data.

Arbitrum’s fraud-proof system enabled Fhenix to compile FHE logic into WebAssembly (WASM), which facilitated secure and efficient executions of encrypted computations. Without this, implementing FHE would have been challenging, as Ethereum does not natively support these operations.

The Road Ahead

The latest implementation of coFHE on Arbitrum is just the beginning. Over the coming weeks, additional integration resources, documents, and announcements will be shared.

Looking forward, the Fhenix team will continue to expand coFHE to more EVM chains and develop ways to integrate real-world use cases into the blockchain space.

Fhenix is also working closely with Tandem Studios, a venture company by Offchain Labs, to find ways to make FHE more accessible and practical for blockchain applications. This will pave the way for secure, decentralized, and private technology.

Developers who are interested in exploring Fhenix CoFHE further can start by getting access totheir documentation.

Get Started with Fhenix

If you want to build privacy-first applications, you can explore coFHE’sdocumentation, join the Fhenix developer community, or test it on Arbitrum today. Stay tuned for new integrations and real-world examples showcasing encrypted computation's power.

Disclaimer: Offchain Labs has a financial interest in Fhenix through investment and/or other commercial arrangements.

URL: https://blog.arbitrum.io/custom-gas-tokens-for-all-arbitrum-chains/

# Custom Gas Tokens for All Arbitrum Chains

Your Chain. Your Rules.Arbitrum’s technology is designed with the goal of providing developers and builders with the freedom to create exactly what they envision without being limited by rigid structures or limitations.

With this in mind, developers and builders can nowenable the use of custom gas tokens on any Arbitrum chain. Custom gas tokens aren’t entirely new, as AnyTrust chains have supported them for over a year and a half. With this new release, however, developers can now have their own custom gas token for any Arbitrum chain that posts data onto Ethereum. Chains that wish to use other data availability services are welcome to do so through customization.

Web3 is grounded in technology that champions self-sovereignty and freedom, such as having decentralized consensus, user-controlled keys, and trustless systems that remove any reliance on centralized intermediaries. Arbitrum’s latest release aims to honor this. There are a few reasons why this upgrade is significant:

## Complete Control Over Gas Tokens

Arbitrum chains were previously limited to using ETH for gas fees. This latest upgrade enables chains to choose any token of their liking to power transaction fees. This means that builders will have the flexibility of choosing their own native token or using an existing token when creating their own chain on Arbitrum, opening up new possibilities for building ecosystems that better align with their goals.

## Tailored Chains for Specific Use Cases

A key advantage of these latest updates is that builders are no longer limited in their choices regarding data availability backends. This means developers can better tailor their chains to prioritize specific use cases, giving them more flexibility and control over overall performance and scaling. Many tradeoffs will no longer need to be made, as custom gas tokens will be available to all chains that post data to Ethereum.

## Full Sovereignty Over Chain

Introducing custom gas tokens will also enable developers to customize every aspect of their chains. This means they will be able to define gas costs and governance models in ways bespoke to their needs.

Laying the Groundwork to Build A Flexible Future

Whether you are building a blockchain for decentralized finance, gaming, social networks, or anything your imagination allows, Arbitrum’s technology will give you the tools to create your project on your terms.

Custom gas tokens for all Arbitrum chains are just the beginning. If you are a builder interested in learning more, reach out today viaXorDiscord,and let’s find ways to collaborate.

URL: https://blog.arbitrum.io/gattaca-titan-timeboost-live-on-arbitrum/

# Timeboost is Now Live on Arbitrum — How Gattaca is Leading Adoption: Q+A

Developed by Offchain Labs, Timeboost redefines transaction ordering for Arbitrum chains and aims to address some of the challenges with First Come, First Serve (FCFS) ordering, such as spam arising from latency racing and the capture of Maximum Extractable Value (MEV) entirely by searchers. Timeboost allows interested users to participate in an off-chain auction for the right to get their transaction sequenced faster in a block.

Ultimately, the mechanism enhances block building with speed, predictability, and efficiency, unlocking a new era for L2s. More details on Timeboost can be found inArbitrum docsand Offchain Labs’medium page.

What makes this launch particularly exciting is that Arbitrum will be the first to bring this type of technology into reality. By embracing new technologies before they become the industry standard, Arbitrum shows that it is willing to test, iterate, and implement mechanisms that push traditional L2 boundaries.

Among the first teams to adopt Timeboost is Gattaca, the research-driven team behindTitan, a leading Ethereum block builder.Titan has played a critical role in shaping the block-building landscape by adhering to three simple values: staying neutral, being transparent, and delivering solid performance.

Fast-forward to today, Gattaca is extending its expertise to Layer 2s by launching its Timeboost implementation,Kairos,now liveon Arbitrum One and Arbitrum Nova.

In a conversation with Offchain Labs, Gattaca discusses how it has built trust on Ethereum, why it’s expanding to L2s, and what Timeboost means for the future of MEV infrastructure.

Gattaca Q+A

As operators of one of Ethereum's largest builders, Titan Builder, what has made Gattaca successful in gaining market participants' trust?

Titan Builder is a neutral builder that does not compete against its users. Being neutral helped us bootstrap order flow early on since we don’t favor any specific subset of transactions. We also focus on fair access for all participants, avoiding conflicts of interest.

We’ve built our entire culture around high-performance engineering, having built out a robust, low-latency infrastructure. Reliable execution is essential for searchers on Ethereum, and by focusing on stable and efficient execution, we’ve consistently provided dependable block access. Our emphasis on security underpins this reliability at scale.

In addition to Titan Builder, we’ve also developed Helix, a new open-source relay codebase powering Titan Relay and other initiatives. We’re also a core contributor to Commit Boost and actively support Fabric, contributing engineering and research to advance the Based Rollup ecosystem. These open-source initiatives unlock new possibilities, including faster relay submissions with Optimistic V2 relays and custom proposer commitments for Commit Boost, demonstrating transparency and our dedication to ecosystem growth.

What motivated Gattaca to expand into L2s with Timeboost?

L2s feel like a natural continuation of the sequencing expertise we developed on Ethereum, so plugging our builder engine into something like Timeboost was a clear progression. It builds on the same low-latency infrastructure and core algorithms we already had in place.

Additionally, the growing L2 ecosystem—particularly Arbitrum—creates an increasing demand for sophisticated infrastructure to handle complex sequencing. Timeboost presents an opportunity to reduce network spam, improve capital efficiency in the L2 space, and align with our broader vision of supporting and enhancing Ethereum at multiple layers.

How will Gattaca’s expertise in L1 block building translate to L2 sequencing with Timeboost? What key differences should market participants understand?

Technically, the big overlap is in how we gather, simulate, and build blocks with minimal overhead. On Ethereum, we often only have the final few milliseconds of block time to finalize a bundle, so we’re used to working under intense speed constraints. Timeboost is similar in the sense that it’s confined to 200ms once the express lane is held.

The major difference is that Timeboost auctions off “express lane” rights for a 60-second window rather than running a first-price auction live for each slot. This means we need to predict the value of a time advantage over a 60-second period to place a fair bid. Pricing this accurately requires a more complex model than a per-block or per-transaction approach.

## Timeboost’s MEV Impact

How does Timeboost's ordering policy differ from other approaches?

The main departure is that with Timeboost, the value of the time advantage is effectively paid for upfront by bidding for the express lane. Whoever wins that express lane is more likely to land trades first, so it’s less about raw latency or per-transaction bidding.

The typical dominant strategies are:

* Purely latency, as Arbitrum was before Timeboost, and
* Priority fee auctions, like Ethereum, where participants bid in real-time for each individual opportunity.

Timeboost evens the playing fields by enabling multiple market participants to engage in the auction, e.g., sub-slot auctions or searchers. Unlike many other MEV approaches, it also maintains Arbitrum's continuous ordering nature, which protects against sandwiching.

What potential use cases does Gattaca expect to see from using Timeboost's express lane auctions?

We anticipate two dominant strategies to emerge with Timeboost:

1. Searchers: Some searcher teams may buy the entire 60-second slot outright, attempting to obtain all MEV according to their strategies during that period. Sniper teams might also pick up multiple consecutive rounds near a predicted token launch. This approach suits firms with deep expertise in pricing short-term opportunities, although the difference here is bidding on total MEV over 60 seconds, rather than just a few seconds.
2. Accessible Markets: Providers (e.g., Gattaca) buy the round-level control and then sub-auction it in real time (e.g., 100ms cycles). This diversifies the types of strategies that can appear because the aggregator spreads the risk (of pre-paying for a 60-second control) across many participants.

What technical advantages does Timeboost's auction design offer compared to other solutions?

* It preserves Arbitrum’s protective properties against sandwiching because the ordering is continuous.
* It allows new entrants to compete since buying a time advantage depends on the searcher’s ability to predict its value rather than on builder performance, similar to Ethereum’s PBS model.
* It can leverage a second-price or similar auction structure, which promotes more efficient price discovery.

What new capabilities or efficiencies do you anticipate Timeboost enabling for your users?

Once someone holds the express lane, either by winning it directly or accessing it via an accessible market, they gain a 200ms advantage on every transaction in that window. This reduces the need for hyper-optimized, microsecond-level setups and opens the door for more sophisticated pathfinding strategies. In addition other benefits include:

* Capital Efficiency: Less need for ultra-fast infra means more investment into modeling and execution.
* Reduced Network Spam: Fewer redundant transactions reduce L1 data costs for the Arbitrum chain.
* Low Impact on General Users: For 99.9% of normal transactions, the experience remains unchanged while benefiting from less congestion.
* Accessible Markets: Lower the barrier for participants who wouldn’t buy a full 60-second slot but still want time advantage access.

## Implementation Plans

What plans does Gattaca have for Timeboost?

With Kairos, we plan to be an active participant in Timeboost auctions, bidding for the 60-second express lane controller on each round. Once we hold the lane, we’ll run a sub-auction every ~100ms, similar to the batch-building logic we use on Ethereum.

The workflow looks like this:

1. Round Control (60 seconds): We win the round-level auction and secure the express lane rights.
2. Sub-Auctions (~100ms cadence):During each sub-cycle, we gather all incoming orders from our connected searchers via a bundle API similar to Ethereum.We simulate each order, calculate the payment, and sort them.Once we have created an ordering, we send the batch to the Arbitrum sequencer, signed by our express lane key.
3. During each sub-cycle, we gather all incoming orders from our connected searchers via a bundle API similar to Ethereum.
4. We simulate each order, calculate the payment, and sort them.
5. Once we have created an ordering, we send the batch to the Arbitrum sequencer, signed by our express lane key.
6. Beating the 200ms Delay: As long as our total processing plus latency is below 200ms (and any competitor’s latency), our sub-auction bundles land first.

How does Gattaca plan to help market participants use Timeboost?

Our primary focus is on democratizing access to the express lane through Kairos, which includes:

* Risk Management: We take on the up-front bidding risk. Searchers only pay if they succeed in getting their transactions included—similar to our builder model on Ethereum. We also manage the express lane token handling so participants don’t need capital reserves for bidding.
* Market Structuring: We aggregate demand from diverse market participants, letting them focus purely on their own strategies rather than trying to outbid everyone for the full 60 seconds. This helps prevent centralization and reduces the advantage of large capital or speed.
* Technical Integration Support: We’ll keep the same interface (e.g., eth\_sendBundle) so searchers can plug into Arbitrum with minimal changes. We also plan to provide documentation, real-time simulation logs, analytics, and guidance for teams transitioning from L1.
* Performance Optimization: Since Timeboost allows more breathing room than microsecond-level races, searchers can focus on optimizing trade logic and pathfinding. We’ll offer tools and analytics to support strategy refinement without needing ultra-low-latency setups.

## Next Steps

Is there anything else you think your users should know about Kairos?

Some key takeaways from our accessible market approach:

* We bid directly in the auction on behalf of searchers, handling the challenge of pricing 60 seconds of future MEV.
* When we win round control:We run a first-priced sealed-bid auction every ~100ms, similar to Ethereum.Bundles and transactions are ordered by price, prioritizing optimal value capture.
* We run a first-priced sealed-bid auction every ~100ms, similar to Ethereum.
* Bundles and transactions are ordered by price, prioritizing optimal value capture.
* The API for integration is the same as Ethereum (eth\_sendBundle, eth\_sendTransaction).
* Searchers pay only if their bundle is successful.

Overall, we see Timeboost as a way to extend proven L1 builder principles into Arbitrum while preserving the core protections of the chain. By fronting the capital risk and offering a familiar interface, our goal is to make sophisticated L2 MEV strategies accessible and beneficial to a broad set of participants—ultimately driving a more efficient and open market.

URL: https://blog.arbitrum.io/driving-depin-innovation-on-arbitrum-with-huddle01/

# Driving DePIN innovation on Arbitrum with Huddle01

Huddle01 is setting a new standard for communication.

The web3 space is designed to be global, user-owned, and offer real-time information. These principles should also apply to its communication layer.

Many applications today focus on building for users already onchain. Though these applications have their benefits, Huddle01 saw an opportunity to build infrastructure for those who may not yet be familiar with the blockchain.

Instead of relying on platforms such as Zoom or Google Meet, Huddle01 has designed a communication layer that enables secure, peer-to-peer communication without relying on centralized servers. This makes it a perfect fit for communities that prioritize trustlessness and transparency.

Building Better Communication Onchain

## What is Huddle01?

Huddle01 is a DePIN network (Decentralized Physical Infrastructure Network) that supports real-time audio and video communication. It does so through its geographically distributed node layer, which is currently available across Europe, Singapore, Asia, North America's West Coast, and North America's East Coast.

According toAyush Ranjan, co-founder and CEO of Huddle01, the network has grown significantly since its launch, with 5.7 million+ minutes of meetings hosted and over 23,000+ users on their native app - Huddle01 Meet. Alive proposal on the ArbitrumDAOalso nominated  Huddle01 Meet be adopted as its official meeting tool.

The network is similar to common online platforms like Google Meet and Zoom, but is built with decentralization, latency, and performance in mind. Unlike most communication tools today, which rely on centralized clouds such as AWS, Huddle01 meetings are routed through its distributed node network.

Ranjan explains that over 2000 high-quality nodes are currently up and running, contributing to over 100,000 Mbps of bandwidth and around 700,000 tHUDL tokens distributed to their node operators.

The network will launch its Testnet Phase 2 on April 10, 2025, and begin stress-testing its infrastructure. It plans to support additional high bandwidth, low latency use cases, including Real-time Gaming, Real-time Finance, and Real-time AI, and enable decentralized connectivity beyond just communication — which, according to Ranjan, Huddle01 has already scaled effectively, hosting ~8M minutes on top of its native app and SDK.

## Why is Huddle01 Building on Arbitrum?

Huddle01 used Arbitrum technology to build its network. This was an intentional decision, Ranjan explains. Huddle01 required a base layer that could enable low-latency transaction finality, had low gas fees, and was customizable. Building with Arbiturm also allowed Huddle01 to access technologies like Stylus, Arbitrum’s WASM VM, enabling developers to write smart contracts using Rust and C++.

“Stylus lets us write performant smart contracts in Rust and C++, which is critical for building latency-sensitive communication infrastructure. It gives us the flexibility of Web2 performance with the trust guarantees of web3,” Ranjan said.

For DePIN builders like Huddle01 who are looking to go beyond proofs of concept and head in the direction of production, Arbitrum provides the ideal environment. This is because Arbitrum technology is:

* Modular by design: Developers can choose exactly what components they want for their chain, allowing them to build a network that caters to their specific needs.
* Optimized for performance: Arbitrum technology is designed to offer high throughput and rapid finality. It delivers speed and flexibility while remaining decentralized and secure.
* Low fees: Low transaction costs enable developers to design economically viable systems.
* Thriving ecosystem:Arbitrum is the largest Layer 2 in the web3 ecosystem, and has a thriving DeFi ecosystem that projects can immediately tap into.

Simply put, Arbitrum gave Huddle01 the necessary throughput, flexibility, and developer experience to build a communication layer that works for web3 applications.

Building the Future of Infrastructure

Huddle01 proves what is possible once you combine a product with market fit, with decentralized infrastructure. By focusing on an essential need in web3, Huddle01 has created a useful product with real utility, which is already being considered by one of the largest DAOs in the ecosystem.

None of this would be possible without Arbitrum technology.  For DePIN builders interested in breaking out of a hype cycle and wanting to achieve actual adoption, Arbitrum is the perfect building place.

URL: https://blog.arbitrum.io/el-dorados-stablecoin-powered-superapp-is-driving-tether-adoption-on-arbitrum-in-latam/

# El Dorado’s Stablecoin-powered SuperApp is Driving Tether Adoption on Arbitrum in LATAM

El Dorado, the Stablecoin-Powered SuperApp transforming cross-border payments in Latin America, has recently crossed1 million downloadsand now serves a growing community ofover 1,000,000 users. These milestones mark a pivotal moment not just for El Dorado, but for stablecoin adoption at scale across Latin America—powered in part byArbitrum technology.

From day one, El Dorado’s mission has been to bridge the gap between traditional financial systems and the digital economy. Today, that mission is accelerating—on-chain and in real life.

### A SuperApp Built Around Stablecoins—and Built for LATAM

El Dorado connects stablecoins likeTether (USDT)andMountainUSD (USDM)to more than 80 local finance apps across Argentina, Bolivia, Brazil, Colombia, Panama, Peru, and Venezuela . This makes it the region’s fastest-growing P2P stablecoin marketplace—and a practical solution to hyperinflation, remittance fees, and banking barriers.

By poweringover 4 million USDT peer-to-peer transactions, El Dorado is giving Latin Americans access to digital dollars that are, mobile, and borderless.

### Tether + Arbitrum: Cheaper, Faster, and More Accessible for LATAM

A key part of this success?El Dorado’s relationship with the Arbitrum Foundation.By integrating Arbitrum’s high-performance blockchain infrastructure, El Dorado is helping users send and receiveTether (USDT)quickly and affordably—even in high-volume, high-volatility markets.

Thanks to Arbitrum, El Dorado users benefit from:

* Lower fees when transacting with USDT
* Faster transaction confirmations
* A scalable infrastructure that supports growing demand

Building on Arbitrum is not just about optimizing payments. It’s aboutcreating financial accessfor people who’ve historically been excluded from legacy banking systems.

### Venezuela’s Most Downloaded Crypto App in 2024

In 2024, El Dorado became the#1 crypto app in Venezuelaand ranked among theTop 5 finance appsnationwide. It now holds36,000+ reviewson the Google Play Store and continues to grow rapidly through influencer marketing, word of mouth, and educational content tailored to the region.

With1M+ downloadsand1,000,000+ users, El Dorado has emerged as a vital bridge between local currencies and digital dollars—andArbitrum is at the heart of that bridge.

### What’s Next: Pushing Stablecoin Adoption Further

Looking ahead, El Dorado is doubling down on stablecoin adoption across LATAM:

* More integrations with local banks and wallets
* New educational initiatives for stablecoin literacy
* Expanded support for Tether on Arbitrum, including for merchants and businesses

This is not just growth. It’s a movement towardfinancial inclusion at scale—powered by Arbitrum, and driven by stablecoins like Tether.

### About El Dorado

El Dorado is Latin America’s leading Stablecoin-Powered SuperApp, enabling seamless P2P, merchant, and cross-border transactions with stablecoins like USDT and USDM. Operating across Argentina, Venezuela, Brazil, Colombia, Panama, Peru, and Bolivia, El Dorado empowers users with a simple, fast, and inclusive financial experience—integrated with the best of blockchain infrastructure.

### About Alessandro Cecere

Alessandro Cecere (El Sultán Bitcoin) is a Venezuelan entrepreneur and CMO of El Dorado, driving stablecoin adoption in LATAM. Formerly at Ledn and Luxor, with 10+ years building in crypto and fintech.

URL: https://blog.arbitrum.io/arbitrum-technology-is-powering-blackbirds-restaurant-revolution/

# Arbitrum Technology is Powering Blackbird's Restaurant Revolution

Restaurant loyalty and payment platform Blackbird is demonstrating exactly how blockchain can create seamless experiences in the real world. Built using Arbitrum technology, which enables developers to create customizable blockchains tailored to specific use cases, Blackbird is designed for restaurant lovers and allows diners to earn points, rewards, and insider perks whenever they visit participating restaurants.

In a conversation with Jeffrey Blanchette, the lead crypto engineer at Blackbird, Blanchette shared that the platform has distributed over 239 million $FLY tokens, growing by 100 million in less than a year, processed over 1 million network transactions, and averaged 3,780 transactions daily.

With over 100,000 self-custodial wallets and 600+ restaurants live across New York, San Francisco, and Charleston, Blackbird has created an experience where blockchain is not the afterthought but the essential architecture that makes it all possible.

The Restaurant Problem

The restaurant industry has had a challenging few years; the COVID-19 pandemic created enormous economic pressure for restaurants to stay open. According to Blanchette, beyond pandemic challenges, restaurants faced ongoing issues with payment processors.

"Restaurants get onboarded with payment platforms at a reasonable rate for a year or two, but as time goes by, they become entrenched in those systems, and then the rates go up," Blanchette said. Changing payment systems becomes nearly impossible for restaurants that create exceptional dining experiences. "It's not feasible for a restaurant busy cooking world-class food to change out their entire payment system.” Meanwhile, loyalty programs across the industry remained fragmented and challenging to implement effectively.

Blackbird was founded to address these challenges and create a unified loyalty and payments platform on the blockchain.

Blackbird’s Approach

At the heart of Blackbird's solution is an app that seamlessly connects the physical restaurant experience with digital loyalty and payments. The company developed an innovative NFC (near-field communication) technology that verifies a customer's physical presence at a restaurant once they check in using the application. This verification is crucial because it eliminates the possibility of gaming the system and ensures that loyalty rewards are genuinely earned.

According to Blanchette, the magic happens when this check-in process evolves into the payment experience. “We know who you are when we checked you in, so that when you go to check out, you don't need to wait for the server to interact with you or bring you your check. What we've done is we've digitized that experience and instead of signing a paper check with a pen, you are now signing that check with your [onchain] wallet."

Making Blackbird’s application a reality required a sophisticated token model. Blackbird quickly realized that using a single token with variable pricing would create problems similar to the infamous"Bitcoin pizza problem," where the value of tokens used for purchases could appreciate dramatically over time. Their solution was to implement a dual-token model: "$FLY," a stablecoin with a fixed redemption price for payments, and "$F2," a custom gas token that powers their ecosystem.

## So why Arbitrum Technology?

After exploring numerous blockchain options, Blackbird found that Arbitrum offered the ideal combination of features for their consumer-facing application. Several key factors drove Blackbird's selection of Arbitrum technology:

### Dedicated Throughput

Arbitrum technology isolates Blackbird's transaction space, ensuring consistent performance without competing for resources with other applications.

### EVM Compatibility

The compatibility of the Ethereum Virtual Machine enables interoperability with different ecosystems, making it seamless to move between chains, particularly Arbitrum chains.

Custom Gas Token Capabilities

One of the most significant advantages was the ability to create $F2, their custom gas token. This allows Blackbird to:

* Provide consistent, fast, and affordable transaction fees
* Eliminate the need for users to acquire specific cryptocurrencies to pay for gas
* Create a better user experience by removing complicated fee estimation

Customization Options

Arbitrum's technology allowed Blackbird to customize many aspects of their chain:

* Sequencer configuration for transaction processing
* Extremely fast (~100-250ms)block times
* Progressive decentralization approach as they onboard customers

Blackbird also plans to leverage upcoming Arbitrum features to enhance their platform, stay tuned. These capabilities will further strengthen reliability and consistency for consumer transactions, reinforcing Blackbird's commitment to making the technology invisible to the user while providing a seamless experience.

Results and Growth

Blackbird’s application has seen impressive growth since its launch. According to Blanchette, the team has distributed over 240 million $FLY tokens and processed over 1 million network transactions (including testnet transactions). In just four weeks after their mainnet launch in late February, they surpassed 300,000 transactions.

Their user base is growing and actively engaging with the platform. With over 100,000 self-custodial wallets created and an average of 3.4 transactions per wallet, Blackbird is demonstrating that users find genuine value in their service. The company has partnered with more than 500 restaurants across key markets, including New York, San Francisco, and Charleston, and plans to expand to additional cities.

This is Just the Beginning

Blackbird is just at the beginning of transforming the restaurant experience. The company is already working on new features to enhance the experience, including solutions for diners who forget to check in when they arrive at a restaurant.

By building on Arbitrum's technology, Blackbird has positioned itself as the leader in bringing blockchain benefits to everyday consumer experiences. The Blackbird app would not have existed without blockchain technology, demonstrating how crypto can solve real-world problems when implemented thoughtfully.

As one of the first truly consumer-focused blockchain applications in the restaurant space, Blackbird represents a new direction guiding crypto innovation: prioritizing utility and user experience over speculation.

Blackbird’s partnership with Arbitrum and its use of Arbitrum technology have made this approach possible. They prove that with the right technology foundation, blockchain can enhance even the most traditional industries.

URL: https://blog.arbitrum.io/how-to-bridge-tokens-to-and-from-arbitrum-one/

# How to bridge tokens to and from Arbitrum One

Getting started in the blockchain world can often be overwhelming, with the seemingly infinite number of networks, tokens, and protocols to remember and understand. Moving assets to and from Arbitrum One may seem complicated initially, but once the steps are broken down, navigating becomes much more manageable.

## What is bridging?

Bridging is the process of moving cryptocurrency from one network to another. Since Arbitrum One is a Layer 2 network built on Ethereum, a bridge is required to transfer assets on and off the Arbitrum One chain.

Bridges can be categorized into native bridges (such as theArbitrum bridge) and third-party bridges, which sometimes provide faster and cheaper alternatives.

## How do bridges work?

Using ETH as an example, when bridging ETH from Ethereum to Arbitrum One, the bridge locks the ETH on Ethereum and mints an equivalent amount of ETH on Arbitrum One. This ensures that individual tokens are not duplicated.

How to Bridge Tokens to Arbitrum One

For this guide, we will use theArbitrum Bridgeas an example.

### A step-by-step walkthrough:

1. Connect your wallet:Once you open the Arbitrum Bridge page, you will be prompted to connect your crypto wallet with the Arbitrum bridge.
2. Choose token:After your wallet is connected to the Arbitrum Bridge, you will be able to choose which token to bridge (ETH, ARB, USDC, etc.) and the exact amount that you would like to bridge.
3. Paying Gas:Depending on which network you are bridging from, let's say Ethereum, gas fees will apply for this transaction. To save money, users are suggested to bridge at times when network fees are lower.
4. Transaction Confirmation:Assets will be available on Arbitrum One shortly after a transaction is confirmed.

For users who want to bridge tokens from Arbitrum One back onto Ethereum, the process will be the same as above. However, please note that there is aseven-day delayin bridged tokens on Arbitrum One being sent back to the Ethereum mainnet.

Bridging tokens to and from Arbitrum One is relatively simple. Understanding the process makes it seamless, whether using the official bridge or a third-party service. If you are looking for additional information, adetailed guidecan be found in the Arbitrum docs.

URL: https://blog.arbitrum.io/clutch-expands-to-arbitrum-one/

# Clutch Expands to Arbitrum One

Formerly known as Smoovie Phone,Clutchis a powerhouse utility protocol that combines prediction markets with decentralized primitives. The protocol began as a niche experiment on Sanko chain and has grown into a community-driven protocol with real-world application.

Clutch’s decision to expand to Arbitrum One represents an exciting new chapter that originated from a strong foundation. According toSimple Farmerthe founder of Clutch, the project’s development has been driven primarily by community contributors rather than traditional funding sources, making it whatSimple Farmercalls “a real community led, grassroots built project.” Unlike many projects that either fizzle out or become stagnant, Clutch has built on its momentum, integrating key functionalities that make it a standout platform in the web3 betting space. Clutch’s move to Arbitrum One will allow its users to leverage Arbitrum One’s deep liquidity and expand its reach.

What is Clutch: The Intersection of DeFi and Prediction Markets

Clutch isn’t just another betting protocol, it’s pioneering a completely new approach to decentralized parlay betting.

## First-Ever Polymarket Parlays

Clutch's standout feature is its Polymarket integration, becoming the first protocol to enable parlay combinations with Polymarket odds. While users could previously only interact with individual markets on Polymarket, Clutch allows users to combine multiple outcomes for compounded odds, all seeded in real-time directly from Polymarket's data.

InSimple Farmer’s own words, "We're the first protocol to offer Polymarket parlays. We're using Polymarket as a data source to build a decentralized prediction platform."

## “Be the Bank" Staking Mechanism

A core Clutch innovation allows users to stake their CLUTCH tokens or USDC into the protocol and earn yield from platform activity. This "Be the Bank" feature creates a two-sided marketplace where stakers provide liquidity and earn returns when users on the other side lose their positions.

This mechanism has generated significant returns for early participants according toSimple Farmer, who said that the platform achieved "over one month 100% APY on deposits."

## Web2-Friendly UX with Web3 Benefits

The Clutch team is focused on creating a bridge between Web2 and Web3 users by removing traditional barriers to entry. By simplifying the user experience, Clutch aims to make decentralized finance accessible to people who may not have previous crypto experience.

Today, Clutch users can seamlessly integrate their X accounts or e-mails to their accounts. Additionally, gas transactions are waived for first time users. A streamlined onboarding process that will allow new users to get started without needing prior crypto experience is also in the works and will be available in the near future.

Join Clutch Today!

The CLUTCH token is now officially live on Arbitrum One, and according toSimple Farmer, the tokenomics were designed with both crypto enthusiasts and Web2 users in mind, focusing on simplicity and ease of use to make the platform accessible to a broader audience.

Built by a community of passionate Web3 enthusiasts, Clutch embodies the ethos of decentralization, fairness, and financial empowerment. Whether you're a seasoned bettor or new to DeFi, Clutch offers a seamless, trustless, and rewarding experience.

The next wave of decentralized betting starts now, will you be part of it?

URL: https://blog.arbitrum.io/building-the-future-of-gaming-how-proof-of-play-scaled-pirate-nation-with-arbitrum/

# Building the Future of Gaming: How Proof of Play Scaled Pirate Nation with Arbitrum

What is Proof of Play?

Proof of Play is a blockchain gaming studio focused on developing fully onchain games where players have actual ownership of in-game assets. They aim to create fun, accessible, and decentralized gaming experiences that don't require complex blockchain knowledge.

What is Pirate Nation?

Pirate Nation is a blockchain-based strategy RPG that immerses players in a world of high-seas adventure, treasure hunting, and naval combat. Developed by Proof of Play, players can own, trade, and upgrade in-game assets like ships, crew members, and weapons, all while exploring vast oceans, completing quests, and engaging in PvP naval battles to build their pirate empire.

Pirate Nation's emphasis on gameplay makes it one of the more accessible Web3 games. The game supports casual and competitive players through PvE and PvP challenges, seasonal events, and special missions. By seamlessly integrating blockchain elements into its gameplay, it creates an environment where players can enjoy the experience regardless of their familiarity with crypto or NFTs.

Case Study

## Opportunity

Pirate Nation is a fully onchain game, meaning all of its game logic runs on the blockchain through smart contracts. This design choice makes the game uniquely transparent - players can verify every game mechanic and rule instead of relying on hidden server-side code. However, running complex game logic onchain requires a blockchain that can handle transactions quickly and cost-effectively to maintain a smooth user experience.

The game initially launched on Polygon, where transaction costs reached approximately tens of thousands of dollars per month at peak usage, making the game economically unsustainable. A subsequent move to Arbitrum Nova dramatically reduced by a factor of ten while providing faster transaction speeds, making it more viable for running complex onchain game logic. However, as Pirate Nation's popularity grew, the game began consuming too much blockspace on Nova, which meant that scaling further would require additional blockspace.

This challenge revealed a fundamental limitation in existing blockchain infrastructure: no single chain could provide the combination of speed, cost-effectiveness, and dedicated blockspace needed to support a complex onchain game with thousands of concurrent players. Traditional blockchain architectures forced games to compete for blockspace with other applications, leading to unpredictable performance and costs. As the team at Proof of Play reflected on this, they reached a crucial realization: "We realized we needed to build our own chains, but also that we loved working with Arbitrum's tech,” Matt Van, CTO at Proof of Play, said. This insight would prove pivotal in Pirate Nation's search for a solution providing complete control over gaming infrastructure while maintaining blockchain technology's security and decentralization benefits.

## Solution

The answer came through Arbitrum's Orbit framework, which enabled Proof of Play to build customized Layer-3 blockchains: Apex and Boss. Arbitrum Orbit allowed Pirate Nation to create dedicated chains optimized for gaming needs. The solution fundamentally transformed the operational model in several powerful ways.

Proof of Play moved to an infrastructure-level cost model rather than paying gas fees for each player's action. This change made the game's economics more predictable and sustainable, as costs could be managed at a systemic level rather than fluctuating with each transaction.

Additionally, running parallel chains through Apex and Boss allowed Pirate Nation to distribute its player load much more effectively. When thousands of players engage simultaneously in battles, trades, and quests, their actions are split across both chains, maintaining consistent performance during peak periods. This approach solved the scaling challenge while keeping the game's economy unified across both chains.

Working with Conduit, Proof of Play optimized these Layer-3 chains for gaming operations. The team pushed Orbit's capabilities to process 70 million gas per second, setting new performance standards for blockchain gaming. This level of optimization was only possible because the chains were purpose-built for Pirate Nation's specific gaming needs

## Performance and Growth

Pirate Nation's decision to become an Arbitrum Orbit chain has delivered remarkable performance improvements. Arbitrum's foundational speed advantage, with block times of just250 milliseconds, provides the essential backbone for responsive gameplay. According to Van, the system can process up to 70 million gas per second, setting new benchmarks for blockchain gaming performance.

In fact, Pirate Nation’s Apex and Boss chains have exhibited consistently high gas consumption, a clear indicator of strong user engagement. Apex, which launched in Feb 2024, has seen gas fee consumption ofover 427 trillion gwei.On a similar trajectory, Boss, which launched in July 2024, has seen gas fee consumption of over136 trillion gwei. Data fromrollup.wtfshows that the Proof of Play chains frequently rank among the highest in Mgas/S, even surpassing many general-purpose chains. This level of onchain activity highlights not only the efficiency of Arbitrum’s infrastructure but also the growing demand for a fully onchain gaming experience.

These technical capabilities have translated into tangible benefits for Pirate Nation's players. The game now supports tens of thousands of concurrent users while maintaining consistent performance. Transactions confirm almost instantly, allowing for smooth gameplay that rivals traditional gaming experiences. The dedicated blockspace ensures that game actions execute reliably, regardless of activity on other blockchain networks.

Pirate Nation’s success has established new standards for blockchain gaming infrastructure and provided a blueprint for future projects in the space. By leveraging Arbitrum technology, Proof of Play has opened new possibilities for the entire blockchain gaming industry by solving the fundamental challenges of speed, cost, and scalability.

URL: https://blog.arbitrum.io/capx-is-bridging-the-gap-between-blockchain-and-ai/

# Capx is Bridging the Gap Between Blockchain and AI

What is Capx AI?

Capx is a protocol empowering users to build, own and trade Artificial Intelligence (AI) Agents. It operates as an Ethereum Layer 2 built with Arbitrum tech and is focused on enabling the creation, deployment, and trading of tokenized AI agents within a decentralized ecosystem. Capx aims to establish the "AI Builder Economy," a decentralized ecosystem where solo developers and small teams can create, own, and scale AI-powered businesses without extensive resources.

Case Study

Opportunity

The convergence of AI and blockchain has created great potential for cutting-edge applications, such as tokenized AI agents. Despite this potential, mainstream adoption remains elusive due to two persistent challenges. The first significant hurdle is fragmented user experience. Users must navigate multiple tokens, wallets, and ecosystems. This fragmented approach creates a steep learning curve, particularly for those unfamiliar with navigating blockchains, and deters broader participation in the AI x crypto space.

In a similar realm, ecosystem integration also remains limited. Many AI agent platforms today require multiple tokens or complicated bridging for every transaction. This means they must bridge between different platforms, manage assets disparately, and endure inefficiencies, all of which contribute to slow adoption. The current landscape sees potential for a unified, decentralized, and user-friendly solution to make blockchain-based AI applications accessible to a broader audience.

Solution

Capx saw an opportunity to address these challenges by creating a seamless and scalable Ethereum Layer 2 protocol built using the Arbitrum Nitro Stack. The Capx ecosystem comprises three interconnected components: the Capx Chain, the Capx Cloud, and the Capx SuperApp.

TheCapx Chainis the decentralized backbone of the ecosystem. Built on Arbitrum, it leverages high throughput, low transaction costs, and Ethereum-level security to create a scalable infrastructure. The single-token model simplifies interactions by designating $capx as the native gas token. This token is also the primary trading medium and governance asset. This eliminates the dual-token friction prevalent in other ecosystems and creates a cohesive user and developer experience. Decentralization and transparency are ensured by integrating Symbiotic’s shared security model, which leverages staked ETH to secure the infrastructure and maintain fairness.

Capx Cloud,a Symbiotic Network,simplifies the deployment of AI agents by introducing a shared security protocol that bridges the gap between traditional and decentralized cloud infrastructures. Developers can deploy their AI applications with a single click, upload their codebase, and rely on trusted operators to handle the complexities of scaling, deployment, and maintenance. Operators are incentivized to use the most efficient resources, whether from decentralized networks like Akash or Render, or from traditional providers like GCP and Azure. By abstracting away technical complexities, Capx Cloud democratizes the deployment of AI applications and allows developers to focus solely on their core innovations.

TheCapx SuperAppis a user-centric gateway consolidating all interactions into a single interface. The SuperApp is a web-based application, that can be accessed via Telegram, as well as any browser, eliminating the need for users to download additional applications. Within the SuperApp, account abstraction and simplified wallet management remove the barriers of private key handling and token conversions. Users can seamlessly trade, own, and interact with AI agents in a unified interface. This approach significantly lowers entry barriers, making blockchain and AI applications accessible even to users without crypto experience.

Capx AI is currently in its testnet phase, with an estimated450,000wallet addresses and over10 milliontransactions.

Why Arbitrum?

Capx initially launched its testnet in early 2024. However, this approach revealed limitations in transaction throughput, cost efficiency, and readiness to handle large-scale usage. Recognizing these challenges, the team pivoted to Arbitrum for its optimistic rollup architecture. The need for higher transaction speeds, greater scalability, and reduced costs were the primary factors that drove this transition. The ability to designate $capx as the custom gas token was another critical factor, enabling the creation of a unified token ecosystem that aligns with Capx’s vision of simplicity and decentralization.

"We wanted transactions to be faster, with a throughput capable of handling 100s of transactions per second, and the costs needed to be as low as possible for the end user. After facing limitations with other options, Arbitrum's Nitro stack stood out because it met all our requirements for speed, cost, and scalability,” Vaibhav Tyagi, the founder of Capx, said.  “Importantly, we wanted a platform that would allow us to customize the user experience, which led us to choose Arbitrum, especially as we launched our own custom gas token. It just made sense for us to move forward with it."

The decision to adopt Arbitrum Orbit was made without prior collaboration with the Arbitrum team, reflecting the strength and independence of the stack’s capabilities. Its robust architecture stood out as the best solution to achieve high throughput, low fees, and a seamless user experience.

Driving the Future of Blockchain

Capx represents a paradigm shift in how AI and blockchain technologies intersect. As Capx transitions from testnet to mainnet, its ecosystem is poised to help redefine the AI x blockchain landscape, paving the way for broader adoption and innovation. With its focus on simplicity, scalability, and decentralization, Capx is not just solving today’s challenges but is building the foundation for the next generation of blockchain-based AI applications.

URL: https://blog.arbitrum.io/the-state-of-nodefi-on-arbitrum/

# The State of NodeFi on Arbitrum

Node Financing (NodeFi) is rapidly gaining interest in the decentralized finance (DeFi) space as a transformative force in the blockchain economy. It enables node operators to unlock liquidity from their Node Licenses (ERC-721s), bringing traditionally hard-to-trade assets into DeFi and introducing innovative financing options that maximize the full financial potential of nodes.

In simple terms, NodeFi is a financial primitive designed to help node owners optimize their assets by bringing new financial innovations and incentives to nodes. This momentum is already evident—NodeFi has surpassed$200M in TVLthrough this new initiative, highlighting the growing demand for liquidity solutions in the node economy.

One way that NodeFi achieves this is through yield tokenization, turning node earnings into tradeable tokens. Another innovation in NodeFi is collateralization, where node operators can borrow assets using their nodes as collateral, and liquidity provision, where the sale, purchase, or trade of tokenized node yields is simplified. It is similar to Pendle, but instead of using points to reward users for participating in its ecosystem, NodeFi uses the node’s emissions over time.

Introducing these different financial tools to nodes allows its owners to transform static infrastructure into economic assets while simultaneously driving the growth and scalability of decentralized networks.

Origins of NodeFi on Arbitrum

A node is a device or software instance that powers a blockchain network. Depending on the type of blockchain and its specific configuration, nodes perform various roles. For example, a full node on Arbitrum One would be responsible for storing blockchain data, validating and propagating transactions and blocks, and ensuring the network’s integrity and security.

NodeFi originated from the rise of node sales and licensing. The team at MetaStreet observed that node sales required substantial upfront capital with long payback periods, resulting in illiquid but cash-flow generating assets. While these fundraises gained traction, attracting multi-billion-dollar players like CARV, Aethir, and XAI on Arbitrum, the momentum eventually slowed. Users found themselves locked into long-term commitments, with limited liquidity to reinvest in other node fundraises, constraining broader ecosystem growth.

Realizing this could be capitalized, MetaStreet collaborated with Xai to create a proof of concept that made nodes indirectly tradeable using derivatives to unlock short-term cash flows. This process split nodes into the yield generated and the principal ownership, similar to separating a property's rental income from its deed.

NodeFi aims to unlock the value of productive, illiquid assets that traditional financial systems overlook, such as Bitcoin miners and crypto market makers, without relying on outdated concepts like tokenizing real estate. This innovative direction highlights the broader applicability of NodeFi's primitives. Node licenses may be the first use case enabled by NodeFi, but the framework extends far beyond. It unlocks new possibilities for other productive yet illiquid assets, such as core crypto infrastructure, including DePIN, GPUs, tokenized validators, and AI hardware.

The current state of NodeFi on Arbitrum: Liquidity Unlock

Following MetaStreet and Xai’s footsteps, other projects, including Aethir and CARV, also saw the benefits of NodeFi. These projects benefit from being on Arbitrum due to its lower gas fees and faster transactions compared with other Ethereum layer 2s. This makes it more economical to deploy nodes and participate in financial activities that would be otherwise impossible given the calldata costs related with complex ERC-721s transactions. Today, node owners are able to access a handful of use cases on Arbitrum networks. This includes:

1. Unlocking the Value of Illiquid Node Assets

NodeFi solutions on Arbitrum allow node owners to unlock the value of illiquid blockchain nodes, being able to draw from its future cash flows with instant liquidity. By tokenizing the yield or collateralizing nodes, node owners can access liquidity without selling the underlying economic ownership.

2. Creation of new Node Derivatives Markets

As mentioned previously, a node’s value can be split into distinct derivatives, which include:

* Yield Tokens: Represent the income generated by the node over time; and
* Principal Tokens: Represent ownership of the node itself.

This separation creates new financial products that can be traded or used in DeFi.

3. Speculate or optimize Node Rewards

By integrating with DeFi primitives, node owners can maximize the efficiency of their node-generated rewards by:

* Staking node-related assets in liquidity pools;
* Using yield tokens as collateral for loans for other DeFi operations (swaps, LP, etc); and/or
* Swapping & speculating on the discounted value of yield tokens.

Preparing for Future Growth

NodeFi represents a shift in DeFi's focus from purely liquid assets to capital markets for productive, illiquid assets. Through the innovative use of derivatives to approximate the value of illiquid assets, teams such as MetaStreet and Xai are laying the foundation for future onchain capital markets.

According to David Choi, founder of Permian Labs, the team behind MetaStreet, the vision for NodeFi is expanding beyond digital nodes into decentralized physical infrastructure networks (DePIN). This evolution integrates hardware-backed assets, such critical AI and blockchain infrastructure assets, into the broader NodeFi ecosystem. While node licenses remain foundational, the same financial principles can unlock liquidity for other illiquid but cash-flow generating assets.

With the U.S. government recently committing up to $500 billion toward AI infrastructure and Bitcoin mining firms carrying over $10 billion in debt, the total addressable market for decentralized infrastructure finance has potential. NodeFi is positioning itself as a "decentralized Stargate," bridging capital markets with the next generation of onchain infrastructure.

As NodeFi matures, its potential to redefine how blockchain infrastructure is monetized and optimized will likely expand, benefiting both individual operators and the broader decentralized economy.

URL: https://blog.arbitrum.io/stylus-sprint-recipients/

# Stylus Sprint Recipients Unveiled

The Stylus Sprint application process has concluded with remarkable success, with strong interest from Arbitrum’s talented developer community. The program received an overwhelming response of 147 high-quality submissions requesting approximately 32M ARB, far exceeding the initial 5M ARB budget. This extraordinary demand speaks to the transformative potential of Stylus and its critical role in Arbitrum's technological advantage in the EVM ecosystem.

The submissions were split across two tracks:

* Open Application Track: 89 submissions requesting ~21M ARB
* RFP Track: 58 submissions across nine categories requesting ~10.95M ARB

After a comprehensive evaluation, 17 projects were chosen for their innovative approaches and potential impact on the Arbitrum ecosystem.

These recipients demonstrated outstanding innovation and alignment with Arbitrum's vision for advancing blockchain technology. The selected projects span crucial areas, including developer tooling, privacy solutions, oracle implementations, and AI integration, strengthening Arbitrum's position as a leader in blockchain innovation.

Over the next 12 months, these selected teams will work alongside the evaluation committee to cement Arbitrum's position as the unrivaled leader in blockchain innovation, pushing the boundaries of what's possible in ways that other EVM chains simply cannot match.

A Note to Applicants

The evaluation committee has been truly inspired and impressed by the incredible quality and innovation across all 147 applications. The depth of talent and creativity in the Arbitrum ecosystem is remarkable. While not every project could be funded in this round, all teams are strongly encouraged to stay engaged.

For teams seeking alternative funding paths, avenues to consider include:

* Joining the Arbitrum Discord to connect with other builders and stay updated on future opportunities
* Participating in future ecosystem initiatives and hackathons
* Checking outThe Arbitrum Domain Allocator Offerings Grant Program

The strength of the applications received reflects the vibrant future of the Arbitrum ecosystem. These innovative projects show great promise to develop and thrive, whether through alternative funding routes or independent paths.

Stylus Sprint Selected Recipients

\*The following project descriptions are derived from developer submissions and do not constitute endorsement or verification of project claims by Arbitrum Foundation or Offchain Labs.

## Open Application Track

Thirdweb Stylus Integration

Stylus capabilities will be brought into thirdweb's full-stack development platform. The team will showcase Stylus's potential through three unique use cases with their partners, making it easier for developers to build and deploy Rust-based smart contracts.

DeBid - Fairblock

Fairblock is revolutionizing onchain auctions by building sealed-bid infrastructure using Stylus. Their solution will serve DeFi, RWA, and tokenization applications, enabling new privacy-preserving use cases that weren't previously possible onchain.

RedStone Oracles

RedStone is developing Rust versions of both pull and push oracles, which will significantly reduce costs and enhance security for Arbitrum's DeFi ecosystem. This implementation will make oracle integration more accessible and efficient for projects building on the platform.

Enclave

As a Compute Provider for secure computation in Encrypted Execution Environments (E3s), Enclave's integration with Stylus will enable private dataset operations while maintaining security. This breakthrough allows for confidential computations without compromising data privacy.

Surety Protocol

This project bridges the gap between fiat and crypto by creating a secured onchain fund backed by multi-currency fiat reserves. Their solution will enhance liquidity access, particularly for non-US/EUR markets, while providing cost-effective on/off-ramps.

Passport XYZ

Expanding their ID verification system, Passport XYZ will enable users to consolidate ID proofs across multiple wallets into a single score, enhancing Sybil resistance and identity verification on the platform.

Open Source Observer

Open Source Observeris developing an open analytics platform specifically designed to track the growing Stylus developer community, providing valuable insights through open-sourced dashboards.

Remix IDE for Stylus

This implementation will bring Stylus support to the widely-usedRemix IDE, enabling developers to develop, compile, deploy, and interact with Arbitrum Stylus contracts through a familiar interface.

## RFP Track Selected Winners

### Tooling for New Languages

Stylus SDK: AssemblyScript to WebAssembly Solution

Wakeup Labs is developing a tool that enables developers to compile AssemblyScript into WebAssembly, making Stylus more accessible to JavaScript’s vast developer base.

### GUI for the Stylus Cache Manager

GUI for the Stylus Cache Manager

CoBuilders is building an open-source graphical interface for Arbitrum’s Stylus Cache Manager, incorporating automated bidding, real-time notifications, and performance insights.

### Enhanced Debugging Workflows and Tooling

Stateful fuzzing of Stylus programs using Medusa:

Trail of Bits’ Medusa, a powerful security testing tool, is being enhanced to support Stylus, enabling researchers to fuzz-test mixed EVM and Stylus contracts in a unified environment.

Walnut: Enhanced Debugging Workflows and Tooling

Major refinements to debugging workflows, filling critical gaps in the developer experience and optimizing multi-contract development across both Stylus and Solidity.

Arbos-foundry

Funding to integrate ArbOS and Stylus support within revm and Foundry, streamlining Solidity development with improved testing frameworks and seamless compatibility with tools like Anvil.

### Enhancing Migration Tooling

StylusPort: Stylus migration framework for Solana

A comprehensive framework, toolkit, and documentation suite designed to significantly reduce the complexity of migrating Solana projects to Stylus, demonstrated through real-world implementations.

### AI-Powered Onchain Innovations

Angel

A collaborative initiative to develop AI-driven agents onARC, a Rust-based framework on Solana by Playground, fostering Rust adoption and strengthening Arbitrum’s presence in the AI-agent ecosystem

9 Lives

A next-generationprediction marketwhere AI agents drive and refine decision-making, designed to create a self-sustaining system that evaluates agent performance based on market outcomes.

### Education Materials and Developer Resources

Stylus Saturdays Odyssey

A dedicatedblog seriesexploring the Stylus ecosystem, spearheaded by a prominent advocate. This initiative includes the creation of three distinct Stylus applications, with step-by-step documentation to onboard new developers.

URL: https://blog.arbitrum.io/defai-the-intersection-of-defi-and-ai/

# DeFAI: The Intersection of DeFi and AI

Artificial Intelligence (AI) is changing the way we interact with the world today, and its impact on decentralized finance (DeFi) is also beginning to take form in what we call DeFAI.

DeFAI is a term reflecting the fusion of AI technology and DeFi protocols. It focuses on integrating AI capabilities into DeFi applications and enhancing Web3 tools' functionality and user experience. This could be applied to financial management, decision-making, and user engagement tasks.

Today, the DeFi space offers users decentralized financial tools that enable them to manage their finances without the need for third parties. However, the complexity of DeFi platforms has created significant barriers to mass adoption.

Many users struggle to understand blockchain-specific concepts such as smart contract interactions, and do not know how to navigate across multiple chains and platforms to perform basic token swaps. Users are also prone to scams and may not be able to grasp precisely how to keep their funds secure, which makes adoption in the DeFi space relatively stagnant. This makes centralized exchanges a more appealing option for users to interact with cryptocurrencies, underscoring the ethos of blockchains in the first place.

The introduction of AI to DeFi can simplify user interactions with DeFi. Through AI’s machine learning algorithms, users may be able to have more streamlined interactions with DeFi protocols, improving the user experience. Additionally, AI systems may help identify potential scams and suspicious transactions, making the DeFi space safer for its users.

According toraz.dmt, in the near future, AI’s integration with DeFi will allow users to purchase crypto as quickly as they can order food from their apartments. Instead of having to navigate multiple platforms, AI will enable users to buy a token directly from a web page, identifying the correct chain and token contract and ensuring the transaction is executed securely.

DeFAI on Arbitrum

## AiSweat.Shop

AiSweat.Shop is a launchpad focused on integrating AI agents with DeFi functionalities. Rather than giving AI agents basic Web3 wallets, AI Sweatshop flips the narrative by using AI to enhance existing DeFi products. This approach enables users to leverage AI for advanced  operations like yield farming, liquidity management, and even automated trading.

Building on Arbitrum was a deliberate choice for AiSweat.Shop. Although the team was initially drawn to Solana or Base due to the active AI liquidity there, it ultimately chose Arbitrum for its thriving DeFi ecosystem and strong community of early adopters.

"Deploying on Arbitrum made sense because it’s the heart of DeFi innovation. The community is active, and foundational projects like GMX continue to thrive here. It was a no-brainer to bring our AI-driven DeFi solutions to a chain with such a vibrant ecosystem," Kate W, a core contributor of AiSweat.Shop said.

AI Sweatshop is collaborating with leading DeFi projects on Arbitrum, including Camelot and GMX, to explore how AI can drive innovation in liquidity management, yield optimization, and beyond. They aim to deliver user-friendly tools and interfaces that allow individuals to maximize returns with minimal effort, showcasing the transformative potential of AI in DeFi.

## Kudai

GBC emerged in 2021, initially launching as an NFT collection that brought together the GMX community. The company was founded by three longtime friends with complementary expertise: XM serving as Chief Executive Officer, feed them as Head of Product and Strategy, and Vee as  Chief Growth Officer. The team has previous experience working on notable projects in the web3 space, including Pudgy Penguins, Vertex Protocol, GMX and Juice Finance.

Kudai and Kaigen are GBC’s two flagship products. Kudai is an autonomous AI agent designed to optimize capital in real-time. It evolves through distinct phases, from student to investor, trader, and redistributor. Kudai is working towards advancing into its next phase, evolving from passive investment to active market participation with enhanced strategies and increased autonomy.

Following Kudai's success, the GBC team created Kaigen, a platform democratizing AI-powered DeFi investment management. Kaigen allows users to create personalized AI agents that continuously execute, optimize, and adapt investment strategies, operating directly from users' wallets without intermediaries.

"AI is not just transforming DeFi. It is revolutionizing how we interact with the web as a whole. We are witnessing a paradigm shift where intelligent agents are becoming intermediaries capable of analyzing, optimizing, and automating complex processes, making systems more efficient and accessible," Vee said.

GBC decided to build with Arbitrum because of its mature DeFi ecosystem, particularly its synergy with GMX. Vee said Arbitrum's technical capabilities, including fast and cost-effective transactions, robust security, and compatibility with essential DeFi infrastructure, influenced the selection. Arbitrum's support through initiatives like the Trailblazer AI G further validated this decision, demonstrating alignment with GBC's vision for AI-enhanced DeFi.

## Aikaverse

Developed by the Fanko team, Aikaverse allows X users to buy and sell crypto directly from the platform without needing a wallet or website. Users can interact with an AI agent to perform transactions seamlessly.

“The best way to abstract the whole experience of people starting to use crypto is by integrating AI technology. By simplifying complex DeFi processes into a few intuitive steps, AI has the potential to make decentralized finance accessible to everyone, not just crypto natives,” Raz.dmt said.

The team decided to build on Arbitrum because of its low fees, high transaction speeds, and developer-friendly environment, raz.dmt said. Most importantly, however, the Aimechain team believed that Arbitrum was the home of DeFi innovation and that being part of this ecosystem would allow Aimecswap to integrate AI into DeFi where it mattered the most.

The Aikaverse team is gearing up for several exciting new developments, including launching a Telegram-based AI agent for cryptocurrency transactions and preparing for the public launch of its token, PTE.

Get involved today!

The DeFAI space on Arbitrum is growing rapidly. Whether you’re a developer or entrepreneur, or if you’re just interested in learning more about the space, now is the time to contribute and learn more about the growing DeFAI space on Arbitrum. You can start building on Arbitrum today, integrate with existing projects, or create something entirely new.

AI innovators on Arbitrum can now take advantage ofTrailblazer, a $1,000,000 grant program administered by The Arbitrum Foundation that is dedicated to funding AI builders on Arbitrum.

If you want to get involved, you can contact Arbitrum today via ourdiscord channels,follow us on X, or read theArbitrum docsto learn more.

URL: https://blog.arbitrum.io/setting-up-your-wallet-on-arbitrum/

# Setting up your wallet on Arbitrum

To unlock the benefits of using cryptocurrencies, it is essential to have an onchain crypto wallet. A wallet is a software application or hardware device that enables users to store, send and receive cryptocurrencies.

Wallets are the digital gateway to using blockchain. Similar to having a bank account with a bank account number, a wallet creates a unique address where users can manage their assets and ensure that their cryptographic keys can be used to secure transactions.

Variouswallets are compatible with Arbitrum One, including MetaMask, Ledger, Rabby and OKX Wallet as well as many others. To begin interacting with one of the 900+ applications in the Arbitrum ecosystem, below is a step-by-step guide to help set up a wallet.

## Step 1: Choose and Set Up a Wallet

As mentioned previously, various wallets are compatible withArbitrum One. You can choose from several types of crypto wallets, each with its own set of distinct features. Depending on how you want to interact with the blockchain, you can choose the wallet that best suits your needs.

* Non-Custodial Software wallets: Software wallets, also known as “hot wallets,” connect to the internet and are ideal for everyday transactions. Due to their online nature, they are convenient but considered less secure than cold wallets. The downside of these wallets is that if you lose your seedphrase or password, you may not be able to recover or reset them.
* Hardware wallets: Hardware wallets, or cold wallets, are physical devices that store your private keys offline. They are more secure than online hot wallets and suitable for long-term storage of large amounts of cryptocurrencies.
* Paper wallet: A paper wallet is a physical copy of your wallet’s private and public keys. While extremely secure from hacking, they are vulnerable to physical damage or loss.
* Custodial Wallets: Provided by centralized exchanges, custodial wallets hold your private keys for you. While convenient for beginners, they rely on the exchange's security, and you don’t have complete control over your funds. One of the conveniences of custodial wallets is that if you forget your credentials, they can be reset easily.

For this guide, we’ll use software wallets as an example. First, download your software wallet from its official website or app store. Most software wallets can be installed as a browser extension. Once that is installed, create the wallets, then follow the prompts to set up a secure password and generate a secret recovery phrase (also known as a seed phrase.) Your secret phrase is crucial for recovering your wallet if you lose access, so store this phrase in a safe, offline location. Once your wallet is set up, you can access your dashboard, which will show your account.

## Step 2: Add Arbitrum to Your Wallet

Depending on your wallet software, the default network will vary. Most software wallets do not automatically have Arbitrum as a network, so you must add it manually. Most software wallets will allow you to add new networks. To use Arbitrum One, you mustselect Arbitrum Onefrom your network list.

## Step 3: Fund Your Wallet

To interact with Arbitrum, you’ll need ETH on Arbitrum in your wallet to pay transaction fees (gas). You can transfer ETH to Arbitrum by using the Arbitrum Bridge. Connect your wallet to the bridge, and follow the instructions to deposit ETH from Ethereum Mainnet to Arbitrum One.

Be sure to also keep some ETH on Ethereum Mainnet for bridging fees. Alternatively, if you are using a noncustodial wallet, such as Binance or Coinbase, it may support direct withdrawals to Arbitrum, allowing you to bypass the bridging process.

## Step 4: Start Using Your Wallet on Arbitrum

You can begin exploring its ecosystem once your wallet is funded and connected to Arbitrum. You can use decentralized applications (dApps) like Uniswap or GMX, send and receive tokens on the Arbitrum network, or track your activity using Arbiscan, a block explorer for Arbitrum.

## Step 5: Keep Your Wallet Secure

Security is paramount when managing cryptocurrencies. Always back up your seed phrase in a secure location. Consider using a hardware wallet for protection, especially if you hold significant funds. Update your wallet software regularly, and beware of phishing attempts, as scammers often mimic official wallet interfaces.  Also be aware of many scams where criminals create fake airdrop and other sites to gain access to your assets.

URL: https://blog.arbitrum.io/uniswap-stylus-hooks/

# Unlocking DeFi Potential: How Stylus Fuels Uniswap Hook Innovation

Uniswap Labs first revealed the idea of “hooks” in 2023, alongside the launch of Uniswap v4. Hooks are programmable extensions that enable developers to customize the behavior of liquidity pools. These pools live within a single contract and can influence actions, including swaps, deposits and withdrawals. Hooks have the potential to allow for advanced use cases like dynamic fee adjustments, risk management, and novel trading strategies, opening new possibilities in decentralized finance (DeFi).

In 2024, the Uniswap Foundation provided a grant to Atrium Academy to launch theUniswap Hook Incubator,enabling developers to bring their hook ideas to life through a multi-month bootcamp culminating in the selection of a capstone project using any technologies and chain(s) of their choice. Many developers chose Arbitrum to build on, which set new records as the first L2 to reach$20Bthen$22Bin monthly volume on Uniswap by December 2024, establishing itself as a premier network for building the future of DeFi. Recently introduced,Stylus— a unique technology built for Arbitrum that seamlessly integrates with Uniswap v4 — played a significant role in this preference. Stylus enables the creation of advanced hook use cases that were previously infeasible or economically unviable on other EVM-based L2s, by providing low-cost, complex on-chain computations and access to a rich ecosystem of Rust libraries. This expanded design space allowed the hook builders to leverage Stylus in their capstone projects to showcase the next generation of DeFi innovation.

Dynamic LP Assurance,DynamicShield, andemberwere Uniswap Hook Incubator winning teams that designed their hooks using Stylus.Autopilot Hook, a team that participated in the Cohort 3 Hookathon, also developed its hook using Stylus.

What is Stylus?

Stylusenables developers to write smart contracts using languages that compile to WebAssembly (WASM), such as Rust, C, and C++. It maintains full interoperability with the Ethereum Virtual Machine (EVM) which means there is no fragmentation to liquidity and composability with existing contracts. Launched on Arbitrum's mainnet in September last year, theStylus Quickstart, along with theStylus Rust SDK,CLI, and theStylus UniswapV4 Hook Template(created by OpenZepplin) provides all the tools developers need to start building their applications and hooks in Stylus today.

Why do Builders Choose Stylus?

## Dynamic LP Assurance

The Dynamic LP Assurance Hook, a Uniswap v4 hook designed to protect liquidity providers (LPs) by dynamically collecting insurance fees and enabling flash loans, was created by Mohak Gupta, a blockchain developer and security researcher, and Aryan Kumar, a full-stack developer and freelancer. Based in India, this two-person team brings six years of combined experience in the Web3 space. As passionate DeFi enthusiasts, they recognized a gap in the market: existing liquidity providers in DeFi ecosystems lacked adequate coverage and adaptive protection tailored to dynamic market conditions.

The team turned to Stylus because it ensured their hook was performant, cost-efficient, and flexible. According to Gupta, the Dynamic LP assurance hook is computationally intensive, relying on dynamic calculations to compute and collect insurance fees based on factors such as liquidity volume, current price, and other onchain metrics.

The team found Stylus’s WASM-based execution model to be significantly more optimized than the traditional EVM bytecode, allowing the hook to perform these calculations efficiently without incurring prohibitive gas costs, which would have been a significant obstacle if implemented solely using Solidity.

“Stylus’s performance and cost advantages made it the obvious choice for our dynamic insurance hook. WASM execution allowed us to implement complex fee calculations seamlessly,” Gupta said.

Initially, the team considered offchain alternatives to minimize computational fees, but Gupta said these approaches introduced trust assumptions and additional data fee dependencies. Stylus, on the other hand, enabled them to perform all necessary computations onchain, maintaining the trustless nature of their design while ensuring seamless integration with Uniswap v4’s architecture.

By leveraging Stylus, the team could focus on innovating and refining their hook without being constrained by technical or cost barriers. This choice proved pivotal in creating a solution that addresses key risks for liquidity providers and operates efficiently within a decentralized environment.

Over the coming months, Gupta and Kumar plan to expand the coverage logic, enhance flash loan use cases, and prepare for a production-ready deployment. They are also exploring advanced Stylus tooling to improve their development workflow.

## Autopilot Hook

The Autopilot Hook is a Uniswap v4 tool that uses machine learning to adjust fees based on market volatility. By predicting high volatility periods, it protects liquidity providers from impermanent loss and lowers fees during stable times to encourage more trading. The developer behind the Autopilot Hook, Régis Graptin, is a deep-learning engineer with experience in cybersecurity and software development. Graptin’s work on the Autopilot Hook emerged from a personal drive to address impermanent loss and create a more resilient liquidity provision system.

The Autopilot Hook leverages a linear regression model to predict market volatility and dynamically adjust fees, a process that involves intensive calculations. Stylus’s capability to compile different coding languages down to WASM allowed Graptin to implement these models directly onchain without compromising performance or incurring excessive gas costs. Additionally, the Autopilot Hook required a system to store and analyze historical data to improve prediction accuracy over time. Stylus’s compatibility with libraries and tools which are otherwise unavailable using Solidity made it possible to manage this data.

"Stylus allowed me to implement a machine learning approach efficiently," Graptin said. "While Solidity was an option, the gas and storage costs and architectural complexity made Stylus a far better fit."

Another driving factor was Stylus’s potential to lower technical and economic barriers. Stylus’s broader programming language support enabled Graptin to use familiar tools and frameworks for implementing his machine-learning models. Stylus also allowed for cost-effective experimentation and iteration, which is essential for refining and validating complex systems for the Autopilot Hook.

Choosing Stylus aligned perfectly with Graptin's vision of creating a robust, scalable solution for addressing impermanent loss and promoting healthier liquidity pools. By using Stylus, he could focus on developing innovative features without being constrained by the limitations of the EVM or incurring prohibitive costs. This synergy between Stylus and his development goals highlights why it became a cornerstone of the Autopilot Hook’s success.

Build with Stylus

Stylus continues to revolutionizethe DeFi landscapeby unlocking a new realm of possibilities for hook builders. By enabling low-cost, complex onchain computations and integrating seamlessly with Rust's extensive library ecosystem, Stylus has transformed what was once impractical or economically unfeasible into tangible innovations.

If you are excited about building with Stylus, check out theStylus Quickstartorget in touchwith the Arbitrum team today. Developers who are interested in joining the nextHook Incubatorcanapply here.

URL: https://blog.arbitrum.io/aep-terms-of-use/

# AEP Terms of Use

The Arbitrum Expansion Program (AEP) sets forth permissive software terms of use tailored for projects that want to use Arbitrum technology to create their own custom Arbitrum chains.

The AEP aims to foster innovation while maintaining specific conditions to protect the Arbitrum ecosystem. It builds on the existing Business Source License with an “Additional Use Grant.”

This means developers building chains that settle onto Arbitrum One or Nova can freely use, modify, and adapt Arbitrum technologies for their unique needs without incurring royalties or fees\* while retaining all the advantages of being a member of the Arbitrum ecosystem. Key benefits of the AEP include:

* Battle-tested technology:Developers are free to use battle-tested and reliable Arbitrum technology to launch Arbitrum One or Nova chains without royalties or fees\*, fostering accessibility and lowering barriers to entry for blockchain projects.
* Entirely customizable:The terms of use allow modifications and customizations of the Orbit technology, enabling developers to tailor it to specific use cases while maintaining compliance with its terms.
* Ecosystem support:Arbitrum  chains built under the AEP will benefit from the interoperability and community support of the broader Arbitrum ecosystem while ensuring the integrity of their network through specific usage conditions.

\*While permissive, any L3 chain that chooses to settle onto parent chains other than Arbitrum One or Nova will be required to contribute 8% of its net chain revenue to the Arbitrum DAO and 2% to the developer guild.

Overall, the AEP terms of use provides a developer-friendly framework that accelerates innovation and adoption while safeguarding the Arbitrum ecosystem. For more detailed insights, visit the officialAEP terms page.

URL: https://blog.arbitrum.io/understanding-gas-fees-on-the-blockchain/

# Understanding gas fees on the blockchain

Gas fees, also known simply as “gas,” are transaction fees on ablockchainnetwork. They are required to perform any operation, including transferring cryptocurrencies, mintingNFTs, or executing smart contracts on the blockchain. Think of gas as the fuel that powers each action on the blockchain. Without gas, no transaction can take place.

Gas fees serve multiple purposes on the blockchain. One crucial role is incentivizing validators. On the blockchain,validators—software programs or machines operated by humans—are responsible for verifying the accuracy of transactions and then adding them to the blockchain. They also play an essential role in preventing any single entity from controlling the network, ensuring trustless operation, and ensuring consensus among participants. Gas fees reward validators for this work, as they receive these fees as part of their compensation. Gas can also deter spam attacks by adding fees to each transaction. This is because malicious actors would not likely want to flood a network with transactions if there is an associated cost, meaning these fees can also contribute to network security.

## How Do Gas Fees Work on Ethereum?

Different blockchain networks have different mechanisms around their gas prices. The exact mechanism of gas fees can vary by blockchain, but here’s a simplified example using the Ethereum network:

Gas Units and Gas Price: Each transaction operation—like transferring tokens or executing a smart contract—requires a certain amount of computational work, measured in gas units. Users specify how much they’re willing to pay per gas unit (the gas price), which is usually measured in "gwei" (giga-wei, or a small unit of Ether).

Calculating the Total Fee:The total transaction fee is the product of the gas units needed and the gas price. For instance, if a transaction requires 30,000 gas units and the user is willing to pay 15 gwei per unit, the total fee would be 450,000 gwei, or 0.00045 ETH.

Dynamic Adjustments:Ethereum and many other blockchains use dynamic fee models, where gas fees fluctuate based on network activity. High demand often results in higher gas prices as more users compete for block space.

## How Do Gas Fees Work on Arbitrum?

Gas fees on Arbitrum are a fraction of Ethereum’s. This is because Arbitrum uses a technology calledrollups, which aggregates multiple transactions into a single batch. Transactions are processed offchain, with only the proofs and calldata stored onchain. This batch is then submitted to the Ethereum mainnet, reducing Ethereum's computational and storage load. Gas fees on Arbitrum are comprised of the following factors:

Execution Costs:Transactions on Arbitrum require computation and storage. These operations are handled on Arbitrum nodes, and fees are paid in ETH. The costs are much lower than Ethereum’s mainnet because Arbitrum handles transactions offchain.

Layer-1 Data Costs:Arbitrum submits data back to Ethereum to ensure the transactions are secure and decentralized. These costs are associated with recording rollup data on the Ethereum mainnet and are shared among all transactions in a batch.

Gas fees are essential to blockchain networks, ensuring their functionality and security. While high fees can be a challenge, blockchain developers are continuing to innovate in ways that can make the technology more efficient and affordable.

URL: https://blog.arbitrum.io/how-stylus-enables-privacy-innovation-on-fairblock/

# How Stylus enables privacy innovation on Fairblock

## What is Fairblock?

Fairblock is a confidentiality protocol that enables confidential and decentralized transaction execution. It leverages advanced cryptographic techniques to protect sensitive information throughout the lifecycle of a transaction. Fairblock leverages dynamic, confidential computing to mitigate centralized risks and prevent information leakage in decentralized applications. This unlocks Credible and Capital-Efficient DeFi mechanisms and AI models.

## What is Stylus?

Stylusallows developers to write smart contracts in languages that compile to WASM—such as Rust, C, and C++—while remaining fully interoperable with the EVM. Introduced to Arbitrum's mainnet on September 3rd, the Stylus Rust SDK and CLI allow developers to start building today.

Case Study

## The opportunity

Fairblock, a confidentiality protocol, faced inefficiency challenges in achieving efficient onchain cryptographic operations within the Ethereum Virtual Machine (EVM) environments.

The protocol primarily focuses on confidentiality through Multi-Party Computation (MPC) to secure onchain data and transactions so no privileged party can exploit the leaked information in public mempools without permission, leading to credible onchain DeFi and AI economies. However, Fairblock and other confidentiality projects faced an obstacle: they could not write smart contracts leveraging the necessary cryptography libraries with the legacy EVM as they were written in Rust or Go.

Additionally, onchain decryption on the EVM was prohibitively inefficient, as performing these operations within a single block would exceed the gas limit, making blockchain applications leveraging encryption impractical.

These limitations constrained Fairblock’s ability to provide scalable and efficient solutions on Ethereum-compatible chains.

## The Solution

The solution is either a. installing EVM precompiles for EVM L1s/L2s, b. running VMs that support Rust or Go through Stylus or Cosmos SDK modules, or c. coprocessing confidential computing in Fairblock.

Stylus marked a significant turning point for Fairblock. According to Peyman Momeni, the co-founder of Fairblock, Stylus’s custom execution environment, where every programming language gets compiled down to WASM, made execution much more efficient and permissionless.

With Stylus, Fairblock engineers could write functions in Rust and bring them onchain in a reliable, efficient and permissionless way without learning a new programming language. This eliminated the need for complex workarounds and expanded the protocol’s ability to reach meaningful applications with confidentiality solutions.

Additionally, Stylus reduced the computational overhead associated with onchain cryptographic operations. This means that Fairblock achieved a more feasible approach for onchain decryption within the constraints of a block, enabling more affordable real-time confidentiality features.

Beyond Stylus's technical capabilities, Momeni said Stylus was a stepping stone that allowed Fairblock to integrate its confidentiality protocol into the Ethereum-based ecosystem, unlocking new opportunities for adoption.

Fairblock’s Stylus-based approach has been widely adopted within the Arbitrum ecosystem, primarily due to its permissionless framework and streamlined developer onboarding. Developers do not need to learn new languages or install extra pre-compiles to get started quickly and easily.

## Implementation and Results

Fairblock launched itsfirst public testnet, FairyRing, in March of last year, allowing app developers to test integrations for programmable privacy in their applications. Thanks to Stylus, a range of innovative applications that were previously inefficient due to technical or economic limitations can now launch within the Ethereum ecosystem, leveraging Fairblock. These new possibilities span several categories, including:

* Credible Auctions:Fairblock can enable fast decentralized and sealed-bid auctions that are not prone to bid censorship, shilling, frontrunning, and other manipulation techniques by privileged market players. This can create more credible economies for Intent matching, RWA and NFT auctions, liquidations, and Fair token launches.
* AI Agents and Private Data Market Places:AI models can rely on privately accessible data, making it crucial to protect privacy while encouraging individuals and institutions to contribute their data securely. Additionally, AI agents can monetize their verifiable models by maintaining confidentiality and trust. MPC also mitigates the risk of these agents being unruggable and unstoppable, as it secures private keys and execution processes against the risks of centralization.
* Onchain Gaming:Developers can introduce dynamic confidentiality in games, enabling features like encrypted game logic, mystery boxes, and randomized reward systems. These elements enhance gameplay by introducing surprises and protecting critical mechanics from being reverse-engineered.
* Decentralizing the MEV Supply Chain:Fairblock enables encryption that helps prevent toxic Maximal Extractable Value (MEV) exploits without relying on centralized relayers, reducing front-running and sandwiching in DeFi. This decentralizes solutions for MEV protection and creates a fairer ecosystem for traders. Toxic MEV can happen in swaps, intent architectures relying on good behavior of offchain actors for execution quality, forced liquidations in perp protocols, European options, and various other scenarios.
* Enhanced Governance Models:Onchain governance systems can integrate confidential voting mechanisms, protecting them against manipulation during the voting window period and heightening privacy while maintaining verifiability. This promotes transparent yet secure decision-making processes.
* Confidential Payments:Payments and transaction data can be encrypted onchain, protecting users from surveillance or exploitation. This is especially valuable for sensitive financial interactions. Fairblock can address regulatory concerns by providing post-execution auditability through decentralized threshold encryption.
* Decentralized PvP Markets:Applications like prediction markets can now leverage pre-execution encryption to protect sensitive data and credible neutrality. This promotes fairness, prevents manipulation, and enhances user trust in these markets.

Stylus empowers Fairblock to offer groundbreaking confidentiality solutions in DeFi, AI and gaming. Stylus significantly reduced onchain computational costs and enabled developers to work with Rust-based cryptographic libraries, ultimately broadening the scope of what is achievable on blockchain networks.

URL: https://blog.arbitrum.io/apechains-bold-move-to-arbitrum-a-game-changing-partnership-2/

# ApeChain’s bold move to Arbitrum: A game-changing partnership

What is ApeChain?

ApeChain is a dedicated blockchain infrastructure layer designed to power the ApeCoin ecosystem, which includes a community of creators, developers, and users. The chain utilizes the $APE token as its native gas token and is designed to handle high transaction volumes, making it ideal NFTs, gaming, and other consumer-oriented use cases. The chain is designed to provide competitive platforms while enabling decentralized yield generation. At the same time, it prioritizes accessibility with features like fiat onramps, streamlined onboarding, and seamless cross-chain bridging with Ethereum, making it user-friendly for both developers and participants.

Case Study

## Opportunity

The genesis of the ApeChain stemmed from the need for scalability and flexibility to support the expanding growth of the APE ecosystem. At the time, high-profile NFT launches by Yuga Labs saw a lot of interest, often leading to high gas prices, congestion on Ethereum and negative user experiences. An example is the Otherside NFT mint, where over$157 millionworth of Ethereum was burned due to extraordinarily high gas fees. The sale involved minting virtual land NFTs, known as “Otherdeeds,” where many users overpaid to secure transactions or lost money on failed transactions, causing frustration within the community. This event underscored the scalability limitations of Ethereum during high-demand events and the critical need to find a more efficient, scalable solution to support their ambitious web3 projects.

In addition, there was no dedicated blockchain environment for ApeCoin and its builder community. This meant that developers who wanted to create applications or games using ApeCoin often faced logistical challenges, as the token’s liquidity was scattered across multiple platforms without a cohesive infrastructure for Web3 development. This, along with other challenges, presented a clear opportunity: to create a blockchain that could allow the Ape ecosystem to scale and unlock its full potential.

## The Solution

To address these challenges, the ApeCoin DAO hosted anonchain vote, where DAO participants evaluated different scaling platforms, including blockchain solutions such as Polygon, Optimism and zkSync. The community ultimately voted in favor forApeChain to be developed with Arbitrum technology and BD led by Horizen Labs, with50%of community members voting for this solution. This decision was influenced by several key factors:

### 1. Customizable gas token

Arbitrum Orbit's flexibility in designing a tailored experience for builders, such as integrating exclusive tools and technologies, was an important factor in why DAO participants favored it. Orbit technology enabled ApeChain to implement unique governance models and use $APE as its native gas token, a feature not offered by other solutions.

### 2. Ethereum alignment

Arbitrum Orbit offered a layer-2 ecosystem that maintained Ethereum compatibility, ensuring ApeChain could leverage Ethereum’s security and infrastructure while operating on a scalable, fast chain.

### 3. Tooling advantages and a robust ecosystem

The integration with Arbitrum Orbit gave the ApeCoin DAO and ecosystem builders access to cutting-edge technologies and tools, which excited them. These included tools such as Stylus, which offers enhanced flexibility for game developers, allowing them to code in languages such as Rust and C++.

Additionally, ApeCoin was integrated with LayerZero, allowing seamless movement of assets between blockchains. At launch, ApeChain was equipped with the best-in-class infrastructure support, including:

* Alchemy and Nirvana for RPC Services
* Pyth Network for Oracle Solutions
* Etherscan for block explorer functionality
* Goldsky and Covalent for indexing

This meant community projects on ApeChain were equipped with strong tooling from the start and could emerge as success stories quickly. An example is ApeExpress, a meme coin launchpad powered by Camelot. In just 24 hours after launch,55 meme coinsgraduated from the bonding curve, seven of which reached a multi-million dollar market cap.

### 4. Unparalleled speed

Orbit chains can achieve block speeds as low as100 milliseconds. Additionally, Orbit chains with low activity can achieve rapid finality without incurring higher batch posting costs by sharing and amortizing these costs with traffic on Arbitrum One.

## Performance and Growth

Since its launch in October 2024, ApeChain has already demonstrated promising traction. It currently has over60 applicationsand integrations deployed across infrastructure, gaming, and DeFi. Prominent projects on the chain includeTop Trader, a high-level trading platform,Otherside, a world-building platform offering an engaging space to create, play, compete, connect, and explore collaboratively andBanana Bill, a fun and interactive DeFi rewards system designed to incentivize community engagement.

By aligning with Ethereum while harnessing Arbitrum's technical innovations, ApeChain has established itself as a robust foundation for the ApeCoin DAO's ambitious vision. With continuous improvements in its growing ecosystem, ApeChain is poised to redefine how decentralized communities thrive in web3.

URL: https://blog.arbitrum.io/how-kinto-enhances-blockchain-security-with-arbitrum-technology/

# How Kinto enhances blockchain security with Arbitrum technology

## What is Kinto?

Kinto is a blockchain network designed to become the “everything app” and provide secure access to financial services by addressing prevalent issues in the blockchain space, such as scams, smart contract hacks, and user experience challenges. Built on the Arbitrum Nitro technology stack, Kinto settles on the Ethereum Mainnet and focuses on creating a safe environment for users and financial applications. Key features of Kinto include account abstraction at the chain level, smart account wallets for all users, wallet insurance, user-owned Know Your Customer (KYC) verification, Anti-Money Laundering (AML) monitoring, and KYT.

## Opportunity

The blockchain space faces significant challenges in usability, security, user confidence, and compliance. Despite technological advancements, high-profile hacks, rug pulls, and security breaches have eroded trust in decentralized finance (DeFi) ecosystems. Traditional financial institutions have also hesitated to adopt blockchain technology due to counterparty risks and the need for end-to-end transaction traceability.

Before co-founding Kinto, Ramon Recuero founded Babylon Finance, a collaborative asset management protocol known for its robust security record. When Rari, a separate protocol that Babylon was integrated with, was hacked, the interconnected nature of DeFi caused a cascading effect. This ultimately led to a bank run on Babylon, forcing the project to shut down and return user funds

This experience highlighted a critical flaw in the blockchain space: even advanced and secure technologies are vulnerable when built on inherently unsafe infrastructure. Motivated by this realization and a desire to reshape the narrative around crypto, from scams and hacks to innovation and trust, Recuero partnered with Victor Sanchez and resolved to build a safer blockchain environment for all.

## Solution

Recuero and Sanchez evaluated various technology stacks to build their network. They found that zk-rollup solutions were still in their infancy, and other optimistic rollup solutions lacked flexibility and responsiveness.

Sanchez said Arbitrum’s technology stack stood out because it was robust and because the team was engaged and helpful. This was exemplified by the team's willingness to help with tech-stack modifications and proactive support throughout the research and development phase. By choosing to build with Arbitrum, some key features Kinto was able to include were:

* Smart Contract Wallets:Every user on Kinto must create a multi-signature smart contract wallet by default. These wallets support up to three signers and provide an extra layer of security. They rely on biometrics, device-specific keys, and additional passkeys, ensuring strong user authentication and control.
* Integrated KYC/KYB Compliance:Kinto enforces KYC (Know Your Customer) or KYB (Know Your Business) compliance for all users. This information is handled offchain and shared only with third-party protocols on a permissioned basis. This ensures secure and compliant operations from block zero, essential for building trust and meeting regulatory standards, particularly for TradFi partnerships.
* Enhanced Node-Level Consensus Rules:Kinto introduced a unique consensus rule requiring KYC/KYB validation at the node level. This modification to the Arbitrum stack ensures that only verified users can interact with the network. Transactions must pass through a controlled entry point, where the node checks compliance with the smart contract. This dual-layer security makes the system significantly more complex to breach, aligning with Kinto’s mission of prioritizing user safety.

Kinto is tackling some of Web3’s biggest problems to create a better experience for users and enterprises. By leveraging the customizability of the Arbitrum Nitro tech stack, they were able to build a product that fits the Kinto mission and technical requirements. Kinto is exemplary of the endless possibilities of building with Arbitrum.

Additionally, by building with Arbitrum, Kinto could utilize unique technology features only available to Arbitrum chains, including aligning closely with Ethereum mainnet and ensuring access to its liquidity and technological innovations. It was also able to use Stylus, a fully interoperable virtual machine (VM) that works seamlessly with the Ethereum Virtual Machine (EVM), enabling developers to write smart contracts in Rust and other languages.

Since becoming an Arbitrum chain, Kinto has attracted over100,000 wallet usersand processed over1.3 milliontransactions. By building on a foundation that emphasizes modularity, support, and technical excellence, Kinto has showcased the transformative potential of collaborative innovation in blockchain technology.

URL: https://blog.arbitrum.io/case-study-galxe-orbit/

# How Galxe Leverages Arbitrum Orbit to Power Gravity Alpha Mainnet

## What is Galxe?

Galxeis a decentralized super app designed to empower developers, brands, and communities to build in Web3. Its comprehensive product suite leverages modular AI, digital identity, and blockchain technology and creates secure, advanced, user-friendly applications that enable self-sovereign digital identity management.

## What is Gravity Alpha Mainnet?

GravityAlpha Mainnet is the first phase of the Gravity blockchain, specifically designed to test and validate its performance within Galxe’s ecosystem. Built on Arbitrum’s Nitro stack as a Layer 2 solution, Gravity Alpha Mainnet allows Galxe to trial advanced multi-chain capabilities and cost-efficient infrastructure where Galxe's core products—such asGalxe Quest,Compass,Passport, andIdentity Protocol—can seamlessly interact with blockchain technology. Together, they support Web3 applications by offering tools for omnichain capabilities, digital identity, and loyalty programs. For instance, loyalty points earned through Galxe Quest have migrated onto Gravity, enabling users to trade, manage permissions, and engage seamlessly across chains.

The insights from Alpha Mainnet will help inform the development of Gravity’s eventual transition to a fully independent Layer 1 blockchain designed for mass adoption, combining gigagas-level throughput with sub-second finality to enable seamless Web3 experiences at scale. It integrates advanced features like zero-knowledge proofs (ZKPs), parallel execution, and restaking-powered proof-of-stake consensus to offer high performance, cost efficiency and security.

Case Study

## Opportunity

Born into the Galxe ecosystem, Gravity was created as a tool to streamline and efficiently transfer data transactions from Galxe’s ecosystem to the blockchain.

Galxe’s existing architecture had difficulty managing complex, high-volume transactions across multiple chains, as well as offering a seamless user experience without exposing users to the complexities of blockchain operations. For this reason, there was a need to make the platform’s backend processes more efficient and transparent by moving these interactions onchain.

This became especially apparent as Galxe’s user base and transaction volumes grew. Due to fragmentation across chains, users had limited visibility of their transaction information. As the need for a more robust and scalable blockchain infrastructure became evident, Galxe sought a technology stack to help them address their growing scalability challenges.

## Solution

Galxe turned to Arbitrum Orbit’s technology stack,Arbitrum Nitro, to address its scalability challenges — officially launching Gravity Alpha Mainnet in August 2024. According to Zach Meltzer, the Director of Business Development at Galxe, the team had decided on Arbitrum for the following reasons:

* Scalability with High TPS:Arbitrum Orbit provided Gravity with the transaction processing speed and efficiency required to manage Galxe’s vast user base. This has allowed Gravity to sustain its volume of millions of daily active users without delays or transaction backlogs.
* Streamlined Deployment and Support:With dedicated support from Arbitrum’s business and technical teams, Galxe launched Gravity without obstacles, avoiding the challenges often associated with setting up a new blockchain. This enabled Gravity to efficiently bring loyalty points, quest data, and other transaction records onchain, enhancing usability and transparency.
* Enhanced Ecosystem Integration:Choosing Arbitrum Orbit facilitated easier integrations and partnerships with other leading infrastructure and DeFi providers. For instance, Gravity collaborated with major partners like LayerZero, Stargate, and The Graph by being part of the Orbit ecosystem. Arbitrum’s established reputation and community also significantly fostered trust and interest from other protocols, making it easier for Galxe to secure support from key ecosystem players.
* Future Expansion Capabilities:Leveraging Arbitrum’s technology addressed Galxe’s immediate scalability and efficiency needs and laid the groundwork for Gravity’s future growth. Galxe’s long-term plan to transition to a standalone Layer 1 will benefit from the strong foundation set by its Orbit-based Gravity system, ensuring continuity as the platform scales further.

In the first two months after launching mainnet, Galxe processed over200 million transactions, significantly reducing transaction fees and increasing throughput. Through its partnership with Arbitrum, Galxe has laid the groundwork for future growth and expansion in transaction volume and user engagement.

URL: https://blog.arbitrum.io/how-weatherxm-is-paving-the-way-for-depin-on-arbitrum/

# How WeatherXM is paving the way for DePIN on Arbitrum

## What is WeatherXM

WeatherXM is building a decentralized weather station network, with over6,000 stations deployed in 80+ countries. WeatherXM uses the blockchain to coordinate weather data collection and rewards users with $WXM tokens based on the data quality they provide and where the weather stations are located. The network's decentralized nature allows for accurate, real-time weather data collection, which can be used for forecasting, insurance, and various DeFi-based financial products.

## What Is DePIN?

The rapid emergence of Decentralized Physical Infrastructure Networks (DePIN) is reshaping our thinking about infrastructure. Leveraging the power of blockchain, DePIN enables the decentralized coordination of physical and digital resources like GPUs, sensors, and weather stations to create highly scalable, efficient networks. In this case study, we examine how WeatherXM is making strides in Arbitrum’s DePIN ecosystem.

Case Study

## The Opportunity: Ground-based weather data

In today's weather forecasting space, there is a crucial gap in weather infrastructure: the lack of ground-based weather data. Not having enough ground-based weather data weakens weather forecasts' accuracy and affects industries such as agriculture and energy. These industries rely on precise weather predictions andlose billions annually due to inaccurate data, leading to resource wastage. Additionally, current weather stations, typically managed by governments, are expensive, inefficient, and often produce incomplete data, especially in underserved regions.

## The Solution:

WeatherXM seized an opportunity to use blockchain technology to address the lack of ground-based weather data. Their vision is to empower communities to deploy affordable, easy-to-install weather stations, creating a large-scale, dense, real-time data collection network. Currently, the WeatherXMNetwork Associationis the owner of all the weather data, and it sells yearly licenses via auction to anyone who is interested in commercializing the data.WeatherXM AG, the company, is buying the data and sells advanced b2b weather services to enterprises to attract more weather-related enterprises and build an ecosystem around the network data.

There are currently threedifferent types of WeatherXM Devices: WeatherXM Helium Version, WeatherXM D1 WiFi bundle (WB1200), and the WeatherXM Pulse 4G bundle (WB3000). Anyone who wishes to participate can followdetailed instructionsto install these devices in their buildings or neighborhoods.

Blockchain technology is critical to enabling community members to participate in providing accurate weather data while ensuring no bad players are gaming the system. Users who install and maintain their weather devices are rewarded with $WXM tokens. Since June, station owners have been rewarded with more than3 million $WXM,  basedon the quality and reliability of their data, and the team itself ensures a high standard for information collection, drastically improving the precision of hyperlocal forecasts.

To ensure that transaction costs are minimized and there is low latency on the network, WeatherXM decided to deploy on Arbitrum One. Manolis Nikiforakis, the CEO of WeatherXM, said that its decision to move to Arbitrum One was driven by the vibrant and innovative DeFi ecosystem that already exists in the community, noting that this was vital to their goals of developing parametric weather insurance and weather derivatives.

Although the full benefits of the network have yet to materialize, WeatherXM is laying the groundwork for future growth in a supportive ecosystem and has been actively working on pilot programs with partners. WeatherXM has already collected nearly 3million station-days, a valuable dataset that is growing every single day. Research institutions such as Aristotle University of Thessaloniki have already beentapping intothis data, and some of WeatherXM’s stations were used during the Paris 2024 Olympics as part of aresearch project.

Additionally, WeatherXM already has over 6,000 stations across 80 different countries and has ambitious goals to grow to over 50,000 stations by 2025, becoming one of the largest weather networks globally. This model also extends its impact to underdeveloped regions, where improved weather forecasting can lead to significant social and economic benefits, such as better disaster preparedness and agricultural planning and the company runs special programs to accelerate this transformation throughcontrolled rollouts.Their first experiment is currently in progress, delivering 2270 weather stations in LatAm, Africa and India. You can read more about this effort intheir blogor join their vibrantdiscord communityof 15k crypto-weather enthusiasts to learn more about this real-world crypto project.

URL: https://blog.arbitrum.io/the-basics-of-adaptive-pricing/

# The Basics of Adaptive Pricing

Today, pricing on theblockchainis designed to manage demand, recover execution costs, and create revenue for the chain owner. When the blockchain operates near capacity, transaction prices increase, often reflected ingas fees. As gas fees rise, fewer people will submit transactions, which prevents the system from overloading.

Running a blockchain necessitates different compute resources, such as CPU, bandwidth, storage, etc. Each resource has its own congestion capacity, meaning one resource may be congested while another is not.

On the Arbitrum and Ethereum blockchains today, when the price for one resource increases, the price for using all other resources rises simultaneously. This is because the usage of all resources is measured using a single universal gas unit, and the only way to control the price would be to modify the price of this gas unit. To prevent nodes from consuming scarce computational resources, gas limits are set to ensure the most limited resource is only partially used.

In an ideal state, separate fees would exist for different resources, allowing them to operate independently. For example, there could be a specific gas fee for CPU, so only the CPU gas price would increase when its usage rises without affecting other resources like storage and network bandwidth.

This means users would ultimately pay fees based on the congestion status of the different resources. This approach is often referred to as multidimensional pricing. However, due to engineering limitations, it is not yet possible for these various resources to operate independently on the EVM.

There is, though, a form of multidimensional pricing that Arbitrum has already implemented. Execution costs are not the only factor in determining the final price a user is charged when they send a transaction to Arbitrum. Another variable in calculating a transaction cost is the price of posting transaction data onto Ethereum Layer 1. This cost is determined by a separate system, independent of the node's execution, and not based on gas fees.

Although multidimensional pricing is not fully implemented on Arbitrum, it is being actively researched, and the Arbitrum community has developed frameworks that cope better with the single gas unit restriction through a strategy called adaptive pricing.

What is adaptive pricing?

With adaptive pricing, a single gas unit remains in use, but the pricing differentiates between resources. Unlike a one-size-fits-all gas fee model, the system adjusts prices based on actual resource consumption.

For example, suppose we have two resources: CPU and storage, and each operation is measured using a single gas unit. In this scenario, the CPU can process no more than ten gas units per second, while storage can process up to 20 gas units per second.

Without adaptive pricing, if a transaction required 15 gas units per second and all those units were CPU-related, the system would be unable to differentiate between resources. It would raise the gas price, regardless of whether the 15 units applied to CPU or storage. The gas limit, or target, is set according to the worst-case usage across all resources. Based on our example, this would be ten gas units.

The main idea behind adaptive pricing is to make gas pricing smarter by distinguishing between different resources instead of applying a uniform price for gas usage.

This means the system would recognize whether gas is used for CPU or storage. In the previous example, the price will be raised if the system determines that 15 gas units are being used for the CPU. However, if those 15 gas units are used for storage, the cost would remain unchanged since storage can process up to 20 gas units per second.

At this point in the article, the discussion has primarily focused on average resource consumption per unit of time, normalized to gas units per second. In practice, the usage rate can be measured over a larger time window because the constraint is less sensitive, allowing for temporary deviations from the target rate.  For example, if CPU usage is 15 units in the first second and five units in the second second, then the usage over a two-second window would be 10 units, meaning the price would not change in this scenario. However, if a more sensitive measurement was used, the price may increase after the first second and decrease after the second second.

The new adaptive pricing system can accommodate both types of measurements.

The key difference here is that while a single gas unit is still used, the system can associate gas with the specific resource it consumes and adjust gas prices based on actual resource usage rather than using the current uniform gas pricing strategy. This will, in turn, promote network sustainability, encouraging an efficient allocation of resources while improving end-user experiences.

URL: https://blog.arbitrum.io/arbitrum-stylus-explained-how-conduit-helps-you-unlock-its-full-potential-for-your-rollup/

# Arbitrum Stylus Explained: How Conduit Helps You Unlock Its Full Potential for Your Rollup

Arbitrum Stylus equips your rollup to support more powerful apps and expands its developer talent pool by millions. How? By bringing WebAssembly (WASM) onchain.Stylusmakes it possible for developers to write smart contracts in popular languages like Rust, C, and C++, in addition to Solidity. Besides supporting more widely known programming languages, WASM also brings performance improvements that can give your chain faster transaction times, lower gas fees, and more sophisticated applications.

That makes Stylus a game changer for your rollup. And best of all, Conduit makes it easy to implement. We’ll tell you how below, plus everything else builders need to know about Stylus.

## What is Arbitrum Stylus and how does it work?

Stylus equips your rollup with a WASM-based virtual machine (WASM VM) that runs alongside the traditional Ethereum Virtual Machine (EVM). Arbitrum dubs this paradigm MultiVM. MultiVM allows developers to write smart contracts in both Solidity and WASM-compatible languages like Rust, C, and C++.

Interoperability between Solidity and WASM is key to MultiVM. With Stylus, a single application can leverage smart contracts written in both Solidity and WASM languages, and each contract can call functions written in the other languages. That allows developers to get the best of both worlds, and leverage the many libraries available in all supported languages. This will enable new onchain functionalities that haven’t previously been explored.

Stylus also makes it possible for your rollup to support larger, more complex applications onchain, running at higher speeds and with lower fees. This is due to WASM’s superior memory optimization — smart contracts built with WASM languages can consume memory more efficiently onchain and execute faster. Those performance improvements, combined with the interoperability we described above, open a world of new possibilities for onchain builders.

## Why Stylus is a game changer for rollups

Arbitrum Orbit rollups that implement Stylus gain several key advantages over other chains. First, Stylus offers performance improvements that benefit both developers and users. The combination of WASM’s memory optimizations and the ability to use high-performance languages like Rust allows for faster transaction execution, lower gas fees, and more complex applications. Rollups that implement Stylus can run more compute-intensive apps, such as cryptographic verifications, zero-knowledge proofs, complex generative art algorithms, and more advanced gaming experiences.

Stylus allows rollups to tap into a wider developer talent pool. By supporting popular programming languages like Rust and C++, rollups can attract more web2 developers and onboard new projects more easily. This broad developer support can lead to faster ecosystem growth and new innovations.

With these enhancements, rollups can offer a more attractive user experience by reducing costs and increasing app speed, all while enabling more sophisticated applications that were previously infeasible onchain.

## How Conduit supports Stylus for rollup developers

Conduithas been a supporter of Stylus since its early testnet stages, and now that Stylus is live on mainnet, we’re proud to offerStylus supportas the default for all new Arbitrum Orbit rollups launched on our platform. The screenshot below shows how easy it is – just click, and your Arbitrum Orbit rollup with Stylus is deployed in minutes.

Additionally, Conduit already powers the highest-performing Arbitrum Orbit rollups in operation, thanks in large part to our newG2 Sequencer. One example isProof of Play, whose gaming rollup has surpassed 65 Mgas/s. That level of computational power combined with Stylus’ performance enhancements can make your rollup unstoppable.

We’re confident that Stylus will play a central role in the future of high-performance rollups, and Conduit is leading the charge to help developers implement this powerful technology on their chains.

## Ready to get Stylus on your Arbitrum Orbit rollup?

At Conduit, we provide end-to-end support for deploying rollups on Arbitrum Orbit, complete with full Stylus integration. Whether you’re a game developer looking to run compute-heavy apps, or a DeFi protocol aiming for zero fees and faster execution, Conduit has the tools and infrastructure to help you succeed.

Contact us todayto learn more about how Conduit can help you integrate Stylus and take your rollup to the next level.

URL: https://blog.arbitrum.io/how-superposition-is-transforming-onchain-rewards-with-stylus/

# How Superposition is transforming onchain rewards with Stylus

## What is Superposition?

Superposition is a decentralized finance (DeFi) protocol that uses Concordia’s adaptive risk model to enhance security, efficiency, and transparency for borrowing and lending. By dynamically managing risk, Superposition mitigates systemic vulnerabilities that are found in static risk models, protecting user funds and fostering confidence in the DeFi ecosystem. It also offers capital-efficient borrowing and optimized leverage, allowing users to maximize returns while maintaining robust safeguards.

## What is Stylus?

Stylus allows developers to write smart contracts in languages that compile to WASM—such as Rust, C, and C++—while remaining fully interoperable with the EVM. Introduced to Arbitrum mainnet on September 3rd, the Stylus Rust SDK and CLI allow developers to start building today.

Case Study

## The opportunity

Superposition was founded by Fluidity Labs, the team behind Fluidity, a blockchain incentive layer that rewards users for using their cryptocurrencies. The purpose of Superposition was to address the ever-evolving utility problem of tokens and its need for greater engagement incentives within and across ecosystems.

In Fluidity, transactions with Fluid USDC introduced a randomized, gamified yield mechanism that rewarded participants at varying scales. With Superposition, the team wanted to go further, establishing these rewards as a native layer onchain and enabling developers to benefit directly.

## The Solution

Before Stylus, Superposition experimented with building their idea on Ethereum and Solana. While Ethereum provided robust security, it had significant drawbacks due to high fees, which proved unsuitable for Superposition’s yield-bearing stablecoin model. Solana, on the other hand, offered faster transactions but limited composability options. With Solana’s comparatively closed-loop ecosystem, Superposition found it challenging to develop cross-platform solutions.

Superposition’s team eventually turned to Arbitrum, where they found an efficient ecosystem that aligned well with their product-market fit and technical goals. However, they continued to look for a toolset that offered Ethereum's composability with the performance efficiency seen in Solana. Stylus on Arbitrum addressed these needs, enabling Superposition to build efficiently within an open ecosystem while benefiting fromlow feesand enhanced scalability.

With Stylus, Superposition developed mechanisms to broaden user incentives and ecosystem utility. Key highlights of this suite include:

1. Yield and Reward Mechanisms:Building on their experience with Fluidity, Superposition created a system where rewards are split between the transaction initiator and counterparty, incentivizing broader ecosystem participation. Stylus allowed Superposition to quickly develop complex yield models that integrate seamlessly within the Arbitrum ecosystem.
2. Payment for Order Flow (PFOF):Superposition leveraged Stylus to implement a native PFOF model. This feature enables the protocol to capture MEV (Maximal Extractable Value) opportunities and redirect them as rewards to users. Stylus provided the flexibility and performance to deploy this mechanism at scale, enhancing liquidity and encouraging consistent ecosystem engagement.
3. Liquidity Mining Infrastructure and Prediction Markets:Stylus enabled the development of a sophisticated liquidity mining framework and a prediction market, both of which aim to enhance user engagement and liquidity. These products are part of Superposition’s larger mission to create an interconnected, reward-driven ecosystem, with Stylus providing the technical foundation for scalable and efficient on-chain implementations.
4. Composability and Developer Tools:The Superposition team appreciated the robustness of Stylus’s Rust SDK, which supported complex automated testing and seamlessly integrated with various cryptographic libraries. Rust's expressiveness and type safety allowed for easy integration with their backend code, streamlining the development process. This enabled the team to efficiently develop, test, and deploy new reward and incentive mechanisms, facilitating quicker iterations and deployments.

## Pushing the boundaries of yield-bearing incentives

Since adopting Stylus, Superposition has significantly expanded its user base and ecosystem activity. By creating a multi-layered incentive structure, Superposition has effectively enhanced liquidity while rewarding users for active participation. The integration of Stylus has allowed Superposition to push the boundaries of yield-bearing incentives, paving the way for innovative new features like account abstraction and social logins.

Looking ahead, Superposition plans to further capitalize on Stylus’s flexibility, focusing on deepening its liquidity and reward mechanisms suite. With Stylus as a foundational tool, Superposition envisions a vibrant, interconnected blockchain ecosystem where users and builders are incentivized to contribute actively, creating a sustainable cycle of growth and utility across the Arbitrum ecosystem.

URL: https://blog.arbitrum.io/stylus-sprint/

# Stylus Sprint: Unlock new opportunities on Arbitrum

## Quick Summary

The Stylus Sprint is live and will offer 5M in ARB grants to developers creating innovative blockchain solutions using Arbitrum Stylus. This sprint supports teams working with Stylus’s Web Assembly (WASM) VM, which will enable coding in any WASM-compatible language (e.g., Rust). Projects will be reviewed by an evaluation committee that will look for scalable solutions with long-term potential and meaningful ecosystem impact. Applications open on November 11, 2024, on Questbook.

Kicking off the Stylus Sprint

The Stylus Sprint program is designed to support builders working withArbitrum Stylus. The sprint will offer 5M ARB worth of grants, along with resources and collaboration opportunities, for teams that want to push the boundaries of what is possible on the blockchain using Stylus. Successful grant applicants will work through a structured milestone-based timeline to develop their ideas with the support of the Arbitrum ecosystem.

## What is Stylus?

Stylusintroduces a fully interoperable virtual machine (VM) that works seamlessly with the Ethereum Virtual Machine (EVM). This new VM executes WebAssembly (WASM) instead of EVM bytecode, empowering developers to code in any smart contract language that compiles to WASM.

With the WASM VM, developers can unlock net new possibilities onchain utilizing packages and libraries that were previously inaccessible on EVM, such as the rich ecosystem of Rust crates. Additionally, the lower gas costs for complex smart contracts make it easier to develop computation and memory-intensive applications, enabling the creation of advanced solutions without excessive costs. The WASM VM is entirely interoperable with the EVM, which means developers can deploy smart contracts written in other languages that will work seamlessly with the EVM.

Through this sprint, the Arbitrum ecosystem seeks to accelerate builders looking to make an impact on EVM by bringing innovative apps and tools utilizing Stylus that showcases its novel capabilities.

## How do I participate in the Stylus Sprint?

The Stylus Sprint will start accepting applications on November 11th from developer teams with project ideas that align with Arbitrum’s mission of scalability and efficiency.

Grant amounts will vary based on the project scope, with funds explicitly allocated for high-impact, technically advanced proposals.

Below is a simplified breakdown of how you can participate in the Stylus Sprint

### Select your Track:

Choose between the open-application track or specificRFPstargeting verticals established by the Evaluation Committee.

Application Process

The Stylus Sprint will be hosted on Questbook!

* Create an account inhttps://questbook.app/
* Go to the dashboard of the “Arbitrum Stylus Sprint”
* Click on the “Submit New” button on the top left of the page.
* Insert your responses based on theStylus Sprint Application Templateinto the form.

After submitting your application, feedback will be given by the Evaluation Committee, comprised of:

* Stylus Team Members from Offchain Labs
* The Dev Team from Arbitrum Foundation
* Michael Lewellen from OpenZeppelin
* Gustavo Gonzalez from OpenZeppelin
* SEEDGov
* JoJo
* Entropy Advisors

After the feedback period, your application will be scored by the Evaluation Committee using theStylus Sprint Grading Rubric. In general, the committee will be on the lookout for and prioritize evaluating applications that:

* Can scale, or help scale, Stylus usage over the long run. Examples include tooling and frameworks that can be extended, built upon, and leveraged by many teams simultaneously.
* Contribute to the young but growing ecosystem of Stylus tooling and infrastructure rather than directly contributeto individual Stylus applications and Stylus Orbit chains, though all teams are eligible and welcome to apply.
* Focus on projects that aim to be self-sustainable in the medium to long termrather than one-off projects that can only exist/survive for the program's short duration.
* Directly highlight core Stylus benefits and strengths with excellent creativity, including the efficient use of computational and storage resources or security primitives that Stylus bolsters and shines at.
* Fill a specific, unique niche in the marketinstead of re-implementing an existing application, tool, or chain in Stylus for the sake of using Stylus (and not the other purported benefits one gets with Stylus).
* Come from outside the Arbitrum and/or Ethereum ecosystemto effectively “grow the pie” of projects and users.

## Timeline

The open application period for the Stylus Sprint will commence onNovember 11, 2024, and conclude onJanuary 6, 2025. The application review will wrap up byJanuary 20, 2025,marking the start of a one-year timeline for the selected applicants. The KYC and compliance process with the Arbitrum Foundation will also begin at this time.

Seize the opportunity to bring your ideas to life with the support of a dynamic ecosystem. Apply for the Stylus Sprint today!

## Resources

If you’re interested in participating in the Stylus Sprint, we have gathered valuable resources to help you hit the ground running.

* Connect with the Stylus Developer Community: Join theStylus Devs Telegram Chatto meet other developers, ask questions, and get involved with the community.
* Get Started with the Quickstart Guide:TheStylus Quickstart Docsprovide all the essentials for setting up and understanding Stylus.
* Explore Real-World Code Examples:VisitStylus by Exampleto see practical examples that will give you a clear view of Stylus in action.

## But don’t just listen to us. Hear from teams already building on Stylus…

### Renegade Finance

“Renegade would not be nearly as fast, cheap, and secure without Stylus. We love the ability to re-use existing Rust cryptography libraries, and we’re blown away by the execution speed and gas efficiency of WASM,” said Andrew, Founding Engineer of Renegade Finance.

Tune in to the full interview with the founders to learn why they chose Stylus and how it’s transforming their projecthere.

### Superposition

“Stylus marries the best of two worlds: the expressiveness, affordability, and safety of the Rust ecosystem and the richness of the EVM. We chose Stylus to build the cheapest and safest defi suite on the EVM without compromising on composability. Stylus is the game-changer that made it all possible,” said Alex, Founder of Superposition.

Check out thefull interviewwith the Superposition founders to hear how they are using Stylus to bring their vision and groundbreaking ideas to life.

### CVEX

“Thanks to Stylus, we can fully exploit the potential of Rust, WASM, and LLVM to create advanced and efficient smart contracts, all while preserving complete interoperability with the entire Ethereum ecosystem. This makes Stylus the only real choice for us to implement fully functional portfolio margin management for derivatives trading onchain,” said Ivan, CTO of CVEX.

### Fairblock

“Fairblock chose Stylus because implementing advanced cryptography algorithms is not feasible using pure EVM opcodes. We are excited to leverage these cryptography algorithms to unlock applications such as frontrunning protected orders, PVP gaming, mystery NFTs, coercion-resistant voting, and confidential AI,” said Peyman, Founder of Fairblock.

Don’t missthe conversationwith the Fairblock founders as they reveal why they chose Stylus and how it’s shaping their innovative journey.

### Lit Protocol

“At Lit Protocol, developing on Stylus has empowered us to deliver core platform features, such as programmable key pairs, with long-term scalability in mind. Leveraging Rust’s cryptography libraries and security advantages, combined with Stylus’s seamless interoperability with Solidity, has enabled our team to accelerate development—making feature upgrades as simple as deploying a smart contract,” said Howard, Sr. Protocol Engineer of Lit Protocol.

Catchthe talkwith Howard and David on how Lit Protocol is Stylus for leveraging Rust cryptography libraries and decentralizing digital security and identity.

URL: https://blog.arbitrum.io/renegade-stylus-case-study/

# How Renegade Leverages Stylus For Their Onchain ZK Dark Pool

## What is Renegade?

Renegadeis a new type of decentralized exchange (DEX), an onchain dark pool, bringing better trade execution to decentralized finance (DeFi) markets.

In traditional finance, dark pools enable large institutional investors to trade assets with high privacy for minimal market impact. Renegade brings dark pools onchain through its decentralized crossing network, facilitating direct matching between buyers and sellers. Orders on Renegade are pegged to the real-time midpoint of the Binance bid-ask spread, ensuring optimal execution without the involvement of market makers.

Theplatformseeks to address critical issues in onchain trading, such as front-running, copy trading, and MEV, which have limited DeFi’s market penetration. By offering high-quality, private, and gas-efficient trade execution, Renegade is working to attract large institutional traders to decentralized venues, making it a key player in improving the DeFi ecosystem.

## What is Stylus?

Stylus allows developers to write smart contracts in languages that compile to WASM—such as Rust, C, and C++—while remaining fully interoperable with the EVM. Introduced to Arbitrum main nets on September 3rd, the Stylus Rust SDK and CLI allow developers to start building today.

## Case study

### The Opportunity: Adding Privacy to DeFi

Despite a decade of decentralized exchange development, only5-10%of crypto trading happens onchain, with most cryptocurrency holders choosing to remain on centralized exchanges. Although onchain trading offers transparency, security, and verifiability in a way centralized trading does not, it comes with its host of issues, including market inefficiencies, front-running, copy trading, and inferior liquidity compared to centralized exchanges.

### The Solution: Stylus and Renegade’s Crossing Network

Renegade has been looking for an optimal environment for its onchain trading platform, previously experimenting on other blockchain ecosystems before finally landing on Arbitrum.

The challenge for the Renegade team primarily lay in finding a system that could handle the computational complexity of verifying zero-knowledge proofs without incurring prohibitive gas costs.

The team initially began building their product on the Solana blockchain, but soon realized that they needed to pivot and explore other options. They spent around 10 months working with Starkware, going through iterations of building out ZK verifiers, before finally turning to Stylus.

“Stylus is the only technology that made sense to build Renegade at the end of the day,” Chris Bender, the founder of Renegade, said. “It’s really hard to find a tool that could drive gas numbers as low as Stylus does.”

According to Renegade, choosing Stylus came down to three key factors:

1. Gas Cost Savings:Renegade chose Stylus primarily due to its gas efficiency, which could achieve settlements for around 30 cents, Andrew Kirillov, founding engineer at Renegade, said. In comparison, similar computations on Ethereum Layer 1 would be two orders of magnitude higher. Stylus also outperformed other Layer 2 solutions based on benchmarks that Renegade tested for underlying operations. Stylus’ WASM-based pricing mechanism allowed for a significant reduction in gas costs, making it the most cost-effective choice.
2. Seamless Development Experience: Stylus offered significant advantages in terms of development efficiency. Renegade's offchain infrastructure, written in Rust for cryptographic computations and zero-knowledge proofs, could be seamlessly reused onchain. This eliminated the need to re-implement the same cryptography in Solidity, saving significant development time and effort. Reusing the Rust code base also allowed for faster audits and more robust security since the offchain and onchain components shared the same secure code paths.
3. Robust Ecosystem:Beyond the technical advantages, Renegade benefited from building on Arbitrum, which offers a robust ecosystem with significant market momentum and scalability. Arbitrum’s well-developed infrastructure and network effects provided the ideal environment for Renegade to scale its private, trustless exchange efficiently. “We love the fact that Arbitrum has already invested a lot in DeFi innovation, and we certainly love the fact that Arbitrum is an L2, and all assets on it can be bridged to L1 trustlessly,” Bender said.

By integrating Stylus, Renegade has developed a high-performance, gas-efficient crossing network that provides traders with superior execution quality, privacy, and verifiability.

### Setting a New Standard for Onchain Liquidity

With Stylus at the core of its infrastructure, Renegade has set a new benchmark for DeFi execution quality. The dark pool’s ability to peg trades to the Binance midpoint without market maker intervention has made Renegade an attractive venue for high-volume traders. Stylus has played a crucial role in making this system scalable, gas-efficient, and aligned with the needs of both privacy-conscious and liquidity-seeking traders.

This collaboration has not only advanced Renegade’s mission to bring better execution to DeFi but also showcased the power of Stylus in enabling sophisticated financial applications onchain.

## Learn More

Stylus is unlocking new possibilities for on-chain applications

* Get building withour docs.
* Watch theStylus Showcase Series onYouTube and hear from more Stylus developers.
* Check out our upcoming hackathon at  Devcon.
* See our upcomingStylus Sprint for grantopportunities.

URL: https://blog.arbitrum.io/agglayer-vs-l3s/

# AggLayer vs. L3s

Asblockchainecosystems evolve, new infrastructure layers are emerging to address the growing need for scalability, interoperability, and efficiency. Blockchain development teams have turned toward different approaches to tackle these challenges.

In a panel discussion atPermissionless III, Harry Kalodner, CTO of Offchain Labs, and Mark Boiron, CEO of Polygon Labs, discussed the differences between Layer 3 (L3) solutions such as Arbitrum Orbit and AggLayer.

L3s are blockchain networks designed to enhance the scalability ofLayer 2 (L2) chains. L3s offer additional flexibility, customization, and cost savings by allowing applications to focus on specific use cases. L3s can settle their transactions onto an L2 chain rather than directly on Ethereum’s Layer 1 (L1). AggLayer, on the other hand, is a modular scaling solution that allows chains to securely transfer assets and aggregate proofs for more efficient settlements on L1 chains such as Ethereum.

Below is a recap of the conversation between Kalodner and Boiron, which helps readers better understand the similarities and differences between these scaling solutions.

## A Focus on Customization

Kalodner and Boiron noted that scaling solutions are designed to enable decentralized applications to further customize their tools and solutions.

Boiron remarked that general-purpose chains will likely “become dinosaurs” in the industry soon, and development teams will likely seek greater differentiation between infrastructure options. Kalodner agreed, noting that two areas of customization have become highly sought after:custom gas tokensand data availability layers.

When asked what developers should consider when choosing the right solution, Boiron highlighted AggLayer’s neutrality and flexible design, which allows developers to integrate with any technology stack. In contrast, Kalodner emphasized that infrastructure costs should be the top priority.

“One of the challenges many teams running chains face is related to infrastructure,” Kalodner said. “There’s been a general belief with ZK technology that you could rely on a single, highly-powered super node because you don’t need many people running nodes for security. However, you still need infrastructure for block explorers, indexers, oracles, and other essential components to run a chain. This has been one of the barriers for teams trying to create a cohesive chain environment similar to what you get on Ethereum at a relatively low cost.”

## Data Posting and Settlement

The cost of posting data highlighted Kalodner's and Boiron's differing perspectives on how settlement and block space are valued and optimized.

Boiron explained that AggLayer is designed to aggregate proofs across many chains, allowing them to post collectively on Ethereum. This aggregation would occur at intervals, reducing the overall cost of posting data.

Kalodner pushed back on the idea that block space could be interchangeable or commoditized, noting that chains like Ethereum, Arbitrum, and Polygon offer valuable block space due to high liquidity and many applications. Posting data more frequently to these chains can increase settlement speed but also incur higher costs.

Kalodner noted that Arbitrum Orbit chains should have the flexibility to choose how often they wish to post data to the parent chain. For these Orbit chains, this feature is calledFast Withdrawals, offering a way to achieve fast finality at low cost by introducingtrust assumptions.

While Boiron agreed that L3 chains may currently offer cheaper settlements than AggLayer, he noted that, in the future, proof aggregation may make direct settlements to Ethereum more cost-effective.

## Addressing Interoperability

Kalodner and Boiron had varying perspectives on blockchain interoperability and the unification of users and liquidity across ecosystems.

Boiron believed that fragmentation is an issue not just within Ethereum but across all of Web3. He emphasized the need to create a system where chains could connect and make their own decisions while being part of a unified network. Boiron noted that AggLayer’s focus is on creating an unopinionated and straightforward network that any chain can connect to, reducing complexity in cross-chain transfers. This way, liquidity can be unified across chains, creating a seamless user experience.

Kalodner agreed that addressing liquidity fragmentation in decentralized finance (DeFi) is essential, but he noted that not all blockchain use cases are liquidity-dependent. He emphasized that while solving fragmented liquidity is important, the bigger issue is addressing user fragmentation. For now, he said, the focus has been on creating infrastructure that allows for scalable growth and broader adoption.

URL: https://blog.arbitrum.io/what-is-blockchain-technology/

# What is blockchain technology?

Blockchain technology is something that has been commonly talked about but widely misunderstood. It is often said in the context of cryptocurrency, Bitcoin, or even decentralization. But what exactly is the blockchain, and why should you care about it?

## What exactly is blockchain?

At its most basic level, blockchain refers to a digital ledger—or online account book—distributed across a network of computers. These computers are referred to as nodes. Every transaction that has ever taken place on a network is recorded on a node. These nodes are responsible for storing blockchain data, verifying that a transaction is accurate (an example would be ensuring that a user has enough funds in their account and that the transactions abide by rules predetermined by a protocol), and relaying information.

In a proof-of-stake blockchain like Arbitrum and Ethereum, nodes are run by validators (software programs or machines operated by humans). Validators are unique nodes to PoS blockchains; they propose, validate, and finalize blocks. To become a validator, you must lock your cryptocurrency onto the blockchain network—this process is referred to as staking.

On Ethereum, for example, to become a validator, a user must deposit 32ETH to activate validator software. Validators participate in securing the blockchain but are also penalized if they act dishonestly. This is to ensure that they act with integrity. It is important to note that all validators are nodes, but not all nodes are validators.

Validators are responsible for creating blocks and then reaching “consensus” on the blockchain, which means they must collectively agree that the data they received is valid. To create a block, a validator must have the following information:

* Transaction data (who sent what and to whom),
* A hash (a unique identifier for the block),
* The hash of the previous block (linking it to the last block in the chain).

Once this process is completed, the block is broadcast to all nodes in the blockchain network, and these nodes will check the validity of these transactions to ensure their accuracy through a “consensus mechanism.” After this is confirmed, the block will be stored and linked to the previous block, forming a chain of records — hence the term blockchain!

## What is the relationship between blockchain and cryptocurrencies?

Cryptocurrencies are virtual currencies that operate on the blockchain. These virtual forms of money are designed to eliminate third pirates, such as banks, and can be used as a peer-to-peer way of transferring value.

On the other hand, the blockchain is the underlying technology that allows cryptocurrencies to exist, and it is essential to emphasize that blockchain user cases are not limited to just these onchain currencies.

Aside from cryptocurrencies, blockchain can also record and verify other types of data. These could include medical records, government identification, and voting results. In an industry such as healthcare, this could mean a safe space to store and share medical records, with patients determining who has access to this information. In government, this could mean creating an entirely tamper-proof voting system.

## TL;DR? No problem:

1. What is blockchain in simple terms?Blockchains are distributed online account books that record data securely and transparently.
2. What are the benefits of blockchain technology?

* Decentralized: there is no central authority that controls the technology.
* Transparent: everyone who uses the blockchain will have access to the same data.
* Secure: the way blockchain is designed makes it tamper-proof.

1. How is blockchain different from cryptocurrency?Blockchain is the underlying technology that enables cryptocurrency to exist. Blockchain user cases are not limited to onchain currencies. The technology can also be used to verify and record other types of data.

URL: https://blog.arbitrum.io/a-guide-to-understanding-blockchain-layer-2s/

# A guide to understanding blockchain Layer 2s (L2s)

Have you ever wondered what the buzz is about when people mention “Layer 2” or “L2” in the crypto space? It's not as complicated as it sounds. Let's dive in and demystify what a “Layer 2” blockchain is and how it differs from a “Layer 1” blockchain.

Layer 2 blockchains are considered scaling solutions built on top of a Layer 1 blockchain. They are designed to solve the blockchain trilemma. Although Layer 2 blockchains operate separately from Layer 1 blockchains, they are designed to inherit its security guarantees.

Ethereum and Bitcoin are the most well-known Layer 1 blockchains today. They act as the foundation on which Layer 2 blockchains are built. These solutions can speed up transaction processing while ensuring that costs on Layer 1 remain low. In the case of Arbitrum, our products are designed to scale the Ethereum blockchain.

## The different types of layer 2s

Not all Layer 2s are built the same, but they most commonly come as either a blockchain rollup or an AnyTrust chain.

### Breaking down blockchain rollups

The purpose of rollups is to reduce the computation load of the Layer 1 blockchain and increase transaction throughput. Rollups are designed to process transactions “offchain” separately from the Layer 1 blockchain. These transactions are rolled up into batches and submitted onto the Layer 1 blockchain as one data piece. The Layer 1 blockchain will then add the data to its “block” and confirm it.

There are two predominant rollups in the blockchain technology space today: optimistic rollups and zero-knowledge (zk) rollups. TheArbitrum Rollup, our flagship product that has been implemented by Arbitrum One, is an optimistic rollup focused on minimizing trust assumptions and scaling Ethereum.

Optimistic rollups

Optimistic rollups assume that all bundled transactions are valid by default unless proven otherwise, thus being “optimistic.” This type of rollup usesfraud-proof mechanismsand achallenging periodto ensure the validity of each transaction.

When it comes to withdrawing funds, users will have to wait a few days (usually around one week on Arbitrum One) or pay a small fee before they can access their funds from the rollup.

Zero knowledge rollups

Unlike optimistic rollups, zk rollups rely on a mathematical proof mechanism that verifies that a piece of information is accurate without revealing its contents. Once the information is proven to be accurate, the rollup will submit validity proofs via smart contracts to the parent blockchain, verifying the transaction.

It is important to note that zk rollups are still in their infancy and are difficult to implement while remaining decentralized.

### AnyTrust

An AnyTrust chain is a Layer 2 chain within the Arbitrum ecosystem to improve scalability while maintaining data availability guarantees.

These blockchains can finalize and settle transactions without the main chain, making them much faster and more affordable. However, they introduce additional trust assumptions and are often more suited to projects building social networks or gaming products.

Unlike traditional Arbitrum rollups, which rely on Ethereum’s Layer 1 (L1) to post all transaction data in compressed form, AnyTrust chains offload this data availability responsibility to an external Data Availability Committee (DAC). This approach significantly reduces costs while still ensuring that data remains accessible when needed.

URL: https://blog.arbitrum.io/arbitrum-stylus-mainnet/

# Arbitrum Stylus: Now Live on Mainnet

Since the public launch of Arbitrum One on August. 31, 2021, the Arbitrum ecosystem has equipped developers with flexible tools to unleash their imaginations and build more powerful, efficient and original products on the blockchain. Today's activation ofStyluson Arbitrum One and Nova mainnets is a milestone that will further enhance that effort.

Arbitrum Stylus on mainnet is here, just in time to celebrate Arbitrum’s third anniversary! Stylus is on Arbitrum One and Nova chains and we want you toDo More. With Stylus. Orbit chains, too, will have the chance to use and experiment with this new technology should they choose to do so - after all,Your Chain. Your Rules.

Currently, Solidity is one of the most widespread smart contract languages on Ethereum. Solidity has played, and will continue to play, an integral role in shaping blockchain technology as we know it. However, there are challenges when building smart contracts with Solidity. It is estimated that there are currently around20,000 Solidity developers today. This number is significantly less than Rust, which has an estimated 3 million developers, and C/C++, which has an estimated 12 million developers.

Stylus provides tools for developing smart contracts in performant and secure languages. Any language that compiles down to WebAssembly (WASM) is supported, including Rust and many more. This is because Stylus introduces a co-equal virtual machine that is completely interoperable with the EVM and is designed to execute WASM instead of EVM bytecode.

The VM does not replace the EVM but rather works together with it to facilitate state transitions and execute respective bytecodes. It is also much more optimized for performance compared to the EVM.

Additionally, WASM programs are more efficient than Solidity due to decades of compiler development for Rust and C. This enables developers to create complex cryptography and computation tasks that would otherwise be extremely gas-heavy. Furthermore, Solidity contracts and WASM contracts are completely interoperable. Solidity contracts can call Rust contracts freely, and vice versa. If working in Rust, developers have access to a full suite of developer tools and onchain functionality out of the box.

With these new programming languages and the fast WASM VM, developers now have the tools to become more expressive with their coding and push the limits of what they're building onchain. Additionally, the WASM VM introduced by Stylus can significantly reduce gas costs for complex smart contracts, meaning that costs would be substantially lower for computation- and memory-intensive applications with Stylus.

The latest Stylus mainnet activation on Arbitrum One and Nova aligns with our greater vision of scaling Ethereum. There is so much uncharted territory to explore with Stylus, and we would love for you to be part of this journey.

## Building with us

Today, the Stylus ecosystem is full of possibilities for growth and expansion. At launch, the Stylus ecosystem is still in its early stages. While the essential components are in place for getting started, we're excited to foster innovation by expanding the ecosystem with additional developer tooling, abstractions, and features. This means that pioneers will be able to shape and refine Stylus as they actively build with it.

The many teams building with Stylus today are early adopters of the technology and are actively pushing the limits of what is possible on the EVM. Below are some examples of exciting projects made possible only through Stylus.

### Renegade Finance

Renegade is building an “onchain dark pool,” a new type of privacy-preserving decentralized exchange. Much like dark pools in TradFi, Renegade enables hidden-size trading for high-quality execution with zero MEV, slippage, spread, or price impact. Under the hood, Renegade leverages both multi-party computation (MPC) and zero-knowledge proofs for pre- and post-trade privacy. According to Andrew, Renegade’s founding engineer, the exchange “would not nearly be as fast, cheap, and secure without Stylus.”

### Superposition

Superposition’s AMM contract, “Longtail,” is a concentrated liquidity-style AMM that aims to enable seamless cross-chain liquidity while minimizing market risk. Thanks to Stylus, Longtail has been designed to keep all its liquidity centralized in one contract, with only one shared asset (fUSDC) between every pool. The AMM also supports Permit2, allowing users to have more seamless, cheaper interactions with tokens.

Alex, the founder of Superposition, says, “Stylus marries the best of two worlds: the expressiveness, affordability, and safety of the Rust ecosystem, and the richness of the EVM. We chose Stylus to build the cheapest and safest defi suite on the EVM without compromising on composability. Stylus is the game changer that made it all possible.”

### Crypto Valley Exchange

Stylus provides Crypto Valley Exchange with the tools to leverage Rust, WASM, and LLVM, enabling the creation of cutting-edge smart contracts that are both efficient and fully interoperable with the Ethereum ecosystem. This capability allows the team to implement onchain portfolio margin management for derivatives trading.

Ivan, the CTO of Crypto Valley Exchange, said, “Thanks to Stylus, we can fully utilize the potential of Rust, WASM, and LLVM to create advanced and efficient smart contracts, all while preserving complete interoperability with the entire Ethereum ecosystem. This makes Stylus the only real choice for us to implement fully functional portfolio margin management for derivatives trading onchain.”

### Fairblock

Fairblock is using Stylus to implement MPC schemes such as threshold identity-based encryption, which otherwise would not be feasible using only EVM opcodes. These algorithms unlock the potential to build applications that enable front-running protected orders, PVP gaming, mystery NFTs, coercion-resistant voting, and confidential AI.

## Ecosystem Support

Adopting Stylus is an ecosystem-wide activity, and many players in the web3 space are working to make Stylus more accessible for everyone.

Some of these partners include:

* Etherscan:Popular block explorer and analytics platform Etherscan is supporting Stylus contract verification and interaction on supported Arbitrum rollups and orbit chains, increasing trust in and accessibility to Stylus smart contracts.
* OpenZeppelin:As a provider of open-source smart contract libraries and security solutions, OpenZeppelin is buildingStylus librariesfor Rust, aiming to make development safer and more secure. This will allow developers to accelerate Stylus development.
* Tenderly:A full-stack Web3 infrastructure provider, Tenderly will support Stylus with block discovery, execution, and simulations. Improvements to tracing and virtual testnets for better Stylus compatibility are also on their roadmap.

## What’s next

Offchain Labs will continue to work on developing the Stylus SDK and making CLI improvements. We are committed to building products that will stand the test of time in an open, transparent way.

Setting the stage for Stylus, several events will be available for you to get involved in over the coming weeks. Below are some noteworthy events to keep an eye out for.

### Stylus Showcases

Starting the week of Sept. 2, the Arbitrum Foundation will host weekly AMAs with teams building with Stylus. These teams will share their experiences developing with Stylus and discuss what the tooling has been able to unlock for them.

### Mainnet Mint

To celebrate Stylus's launch, The Arbitrum Foundation will also be hosting a mint for the first-ever NFT contract powered by Stylus! This NFT, featuring artwork by artist Jimena Buena Vita, will be available for mint on Sept. 9, 2024.

### Stylus Pro Series

Live workshops, planned for the end of September and the end of October, are available for advanced builders who want to use Stylus to build the previously impossible on the EVM. Some use cases include:

* Zero Knowledge Proofs;
* 25519 curve verification and other cryptography methods;
* Fully Homomorphic Encryption;
* Black Scholes modeling for options pricing; and
* Storage proofs.

### Stylus Sprint

The Stylus Sprint program is designed to encourage the early development of Stylus smart contracts and tooling, which can ultimately unlock Stylus's potential for the broader crypto community.

A DAOproposalis currently seeking to fund the initiative with rewards of up to 5 million ARB. The proposal is currently seeking feedback from the Arbitrum DAO, and if passed, team applications would begin on Oct. 4.

URL: https://blog.arbitrum.io/announcing-bridged-usdc-as-a-custom-gas-token-for-orbit-chains/

# Announcing Bridged USDC as a Custom Gas Token for Orbit Chains

On January 24 of this year, Arbitrumannounced custom gas token support for Arbitrum Orbit chains, allowing Orbit chains to charge gas fees using an ERC20 token of their choice, including their own tokens.

Bridged USDC is now supported as a custom gas token on Arbitrum Orbit chains! This milestone marks a significant enhancement in the way transactions are conducted within the Arbitrum ecosystem, providing users with increased convenience, price stability, and accessibility.

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Your chain. Your rules.

Builders will benefit from even more ways to customize their Orbit chains, including: quickly setup via Orbit RaaS providers as a standard configuration option and the opportunity to apply forUSDC Grant Programfrom Circle.

## What Does This Mean for Users?

### Easier Payments

With bridged USDC as a custom gas token, users can now pay for transaction fees using one of the most popular and widely accepted stablecoins. This eliminates the need to hold multiple types of tokens solely for the purpose of covering gas fees, streamlining the transaction process and making it more user-friendly.

### Enhanced Stability, Less Gas Price Volatility

As a digital dollar,USDCoffers price stability, pegged 1:1 to the US Dollar. This stability is crucial for users and developers alike, providing a predictable and reliable medium for covering gas fees. By supporting bridged USDC as a gas token there is no more worrying about Eth price volatility impacting your transaction costs when building Orbit Chains.

### Increased Liquidity and Accessibility

With over $1.6B in native USDC currently on Arbitrum, supporting bridged USDC as a gas token lowers the barrier to entry for new projects looking to build on Arbitrum Orbit chains, as well as for their users. USDC is already a staple in the crypto community, and its integration as a gas token makes it easier for users to engage with the Arbitrum ecosystem without needing to convert their assets.

## What Does this Mean for Builders?

### Quick Set Up for Builders via Orbit Raas Providers

Developers can get started with@Alt\_Layer,@Calderaxyz,@Conduitxyz, and@GelatoNetworktoday, with added support from@Ankrand@AlchemyPlatformcoming soon.

### Apply for USDC +  Orbit Development Grants

The USDC Grant Program at Circle will consider projects that are leveraging bridged USDC as a gas token on Orbit chains. If you are building an Orbit chain, apply here:

https://www.circle.com/en/usdc-grant-program

## Looking Ahead

This integration is just one of several initiatives that Arbitrum is working on with Circle.  Stay tuned for more updates and announcements in the future.

URL: https://blog.arbitrum.io/an-quick-introduction-to-arbitrum-orbit/

# A quick introduction to Arbitrum Orbit

If you want to build your own application on the blockchain look no further than Arbitrum Orbit.

Arbitrum Orbit allows users to create their own customizable Arbitrum Rollup or Arbitrum AnyTrust chain that is compatible with Ethereum.

Founders and developers will have the option to configure various components of their chain, including throughput, privacy, gas token, governance, precompiles, data availability and others.

Orbit chains will also have access to the Arbitrum Nitro tech stack and other tooling, which includes interactive fraud proof mechanisms, advance compression, and compatibility with Arbitrum Stylus.

## What is Orbit?

Arbitrum Orbit is designed for those interested in building advanced, tailored protocols using the Arbitrum Nitro technology stack.

Chains built on Orbit can be a Rollup or AnyTrust Chain, and developers can choose exactly what underlying infrastructure to use whilst building their own Orbit chain. They will also have the capability to configure privacy, permissions and fees on their chain.

Unlike Arbitrum One and Arbitrum Nova which is governed by theArbitrum DAO, Orbit Chains are governed by those who create them, which means that its governance is entirely determined by its builders.

Orbit Chains are fueled by self-managing, independent Arbitrum Nitro nodes, which means that when you launch a Orbit Chain, it is part of an ecosystem of connected chains that can exchange information with each other.

## Why should I launch my own Arbitrum Orbit chain?

The possibilities around what you can build with Arbitrum Orbit chains are endless. For example, it can be used to host an ecosystem of smart contracts and applications, or just one or two specifically designed applications.

Users could also use an Orbit change to host a centralized service and have significant oversight over their product, if they wish to do so. Additionally, a developer could choose to build multiple Orbit chains that all interact with each other in a trustless manner, whatever you want to build on the blockchain, you can do so with Arbitrum Orbit, and with the support of a healthy, supportive ecosystem.

Arbitrum’s advance tooling is at your disposal, and you are able to decide exactly what features you want and what features to pass on. Some key components to consider include:

* Dedicated throughput, which ensures that your chains needs are met and are consistently performant. This significantly reduces the need to look for consistent resource availability, and ensures that you will not need to compete for storage or computation space.
* Compatibility with latest Arbitrum tooling, such as Stylus and BoLD. This enables you to tap into the latest technologies to ensure that you and your team can innovate in ways without having to worry about the reliability of the underlying infrastructure.
* Lower and more steady gas costs as Orbit chain traffic is not affected by Arbitrum One and Ethereum traffic. Meaning that gas prices are likely to remain relatable stable even in the instance where there is higer onchain activity elsewhere
* Customizable gas tokens. Orbit chains that choose to build an AnyTrust chain will have the opportunity to use any ERC-20 token as their native gas token, meaning that you can seamlessly integrate your application with the entire app ecosystem.
* Highly secure relying on underlying Arbitrum L2s.

If you are interested in learning about projects that already exist in the Arbitrum Orbit ecosystem today, you can discover them through theOrbit EcosystemPortal.

URL: https://blog.arbitrum.io/case-study-xai-and-arbitrum-orbit-revolutionize-onchain-game-publishing/

# Xai and Arbitrum Orbit Revolutionize Onchain Game Publishing

Blockchain technology can revolutionize the gaming industry by decentralizing ownership and reshaping in-game economies. That gaming revolution will be built on blockchain infrastructure that makes onchain gaming as intuitive as Web2 games. EnterXai, the pioneering Layer 3 solution for AAA gaming, powered by Arbitrum’s cutting-edge scaling technology.

## Xai: Pioneering the Future of Gaming

Xai is on a mission to redefine the gaming experience by addressing key pain points in onchain gaming. From throughput and gas fees to user experience, security, and decentralization, Xai's purpose-built blockchain is designed to hide the complexities of blockchain gaming, making it more accessible and user-friendly for gamers.

The Xai Foundation, the driving force behind Xai, covers transaction fees for its own games and offers subsidies to external games joining the Xai ecosystem. This eliminates the hassle of managing crypto wallets and ensures a seamless gaming experience for both seasoned blockchain enthusiasts and traditional gamers venturing into the space.

## Building a Thriving Xai Ecosystem

At the heart of Xai's vision lies the creation of a vibrant gaming ecosystem, where innovative titles thrive and players are rewarded for their participation. Games developed by Xai, such as the upcoming card-battle game Final Form, are set to lead the charge. Final Form introduces players to a world where limited edition NFT cards unlock a universe of companions, mutates, and relics. With Chromos as battle rewards, players can evolve cards to Legendary Rarity, fostering scarcity and value within the game.

LAMOverse, another exciting addition to the Xai ecosystem, brings the action-packed world of LAMO toys to the digital realm. LAMOverse promises adrenaline-fueled battles with personalized hovercars and destructible environments.

On the publishing front, Xai has already attracted renowned NFT game studio Laguna Games, known for their hit title Crypto Unicorns. Developer Pixel Vault is also coming to Xai with its BattlePlan crypto game and Reboot, a gaming protocol that allows other games to build skills-based contests with tangible rewards.

## Why Xai Chose Arbitrum Orbit

Behind Xai's seamless gaming experience lies the power ofArbitrum Orbit, Arbitrum’s custom gaming chain tailored to meet the unique needs of game developers and players alike.

Tobias Batton, CEO of Ex Populus, the labs company behind the Xai Foundation, underscores the significance of Arbitrum's role in shaping Xai's success: “After spending two years working on test deployments with some of the most well-known L1s and L2s in the industry, we came to the conclusion that deploying our games to those blockchains would create a horrific user experience that would destroy our game's chance to succeed.”

“We worked closely with the Offchain Labs team, and they built us a chain from the ground up that was intended for games from the start. This means lightning-fast transaction times, a fully gasless experience and abstracted wallets. Because of this, gamers can do exactly what they want to do, play games seamlessly,” explains Batton.

## What’s Next?

FollowXai on Xas it works toward onboarding the next billion gamers into Web3. Interested in developing your own custom chain? Learn more about Arbitrum Orbit with ourgentle introduction to Orbit chains. Keep updated on all things Arbitrum onX,Discord, andTelegram.

URL: https://blog.arbitrum.io/a-beginners-guide-to-arbitrum-products/

# A beginner’s guide to Arbitrum products

So, you’re new to the blockchain technology world and you have just learned a little bit about Bitcoin and Ethereum. Then, during your research, you came across Arbitrum, and you’re wondering who these people are.

To simplify, Arbitrum is a suite of technological innovations designed to scale Ethereum. Arbitrum chains are Layer 2 networks built to reduce Etheruem's computation load, making transactions cheaper and faster.

## Arbitrum solutions

Arbitrum has a handful of solutions that are being used to scale Ethereum today.

Our flagship product, Arbitrum One, is the live implementation of the Arbitrum Rollup Protocol. The solution is designed to rely on Ethereum for security whilst moving some components offchain.

There is also Arbitrum Nova, the live implementation of the Arbitrum AnyTrust Protocol, which reduces transaction fees by storing transaction data offchain using a Data Availability Committee (DAC).

Both Arbitrum One and Arbitrum Nova are built using Arbitrum Nitro, the core node software for  Arbitrum chains.

### What is the Arbitrum Rollup and why do we need it?

Ethereum is designed so that almost anyone can spin up an Ethereum node and validate the chain. Every Ethereum full node must process every transaction, meaning the blockchain’s throughput is relatively low. This was intentionally designed to ensure that the network remains decentralized and secure.

The Arbitrum Rollup Protocol could be seen as an extension of Ethereum. Arbitrum One users can process their transactions faster and at a lower price than on Ethereum itself while leveraging Ethereum’s security.

Like most rollup solutions, the Arbitrum Rollup Protocol processes transactions offchain, then bundles them into batches before submitting them to Ethereum. Ethereum optimistically assumes that all transactions on Arbitrum are valid until proven otherwise through our dispute protocol, which is another reason why you would often hear people referring to the Arbitrum rollup as an “optimistic” rollup solution.

What steps are in place to ensure that no fraudulent activity slips through the cracks?

Arbitrum currently has fraud-proof mechanisms to ensure no fraudulent activities occur. These mechanisms rely on validators who track state transitions or the chain's progress. Validators make claims about the chain's state and can dispute the claims of others.

It's not expected that every Arbitrum user would be interested in becoming a validator, but it is worthwhile noting that anybody who is interested in becoming a watchtower validator can do so. Additionally, the Arbitrum fraud-proof mechanism is designed so that even having one honest validator will be enough to ensure that the chain remains secure.

Arbitrum’s fraud-proof system is a fundamental feature of the Rollup Protocol, and it is how the system is able to inherit Ethereum security.

### How does the Arbitrum AnyTrust Protocol differ from Arbitrum Rollup?

Crypto transaction data is stored on a network and should be accessible and recoverable by all network participants. This is often called “data availability” and is critical to preventing fraudulent activity. While rollups post all transaction data to Ethereum, the AnyTrust Protocol offers an alternative solution.

The Arbitrum AnyTrust Protocol achieves this by introducing additional trust assumptions that make transactions cheaper. Unlike the Arbitrum Rollup Protocol, which is trustless and can be more gas-intensive, the Arbitrum AnyTrust Protocol uses what we call a Data Availability Committee (DAC) to store data offchain and provide it on demand instead of relying on Ethereum as the Data Availability (DA) Layer.

The DAC comprises trusted parties that must make data available during a dispute. Members of the DAC are also responsible for publishing onchain attestations to show that the data is available.

### How did you build all this?

All of these different Arbitrum products are built using Arbitrum Nitro, the tech stack that incorporates Geth (go-ethereum) — the standard EVM engine for Ethereum. Abitrum Nitro replaced the old Arbitrum tech stack (Arbitrum Classic) in August 2022,

In addition to Arbitrum Nitro, the team is also developing a new tech stack called Stylus, a new Virtual Machine that runs alongside the EVM. Stylus enables smart contract developers to write smart contracts in more languages, including Rust and C++. Stylus is currently live on Arbitrum Sepolia.

URL: https://blog.arbitrum.io/welcome-to-the-stylus-blitz-hackathon/

# Welcome to the Stylus Blitz Hackathon

Stylus is live on Arbitrum Sepolia! And we can’t wait for builders to experiment.

We’re thrilled to announce theStylus Blitz Hackathonto inspire developers to leverage the power of Stylus contracts. With Stylus set to go live on Arbitrum Sepolia on June 17, 2024, this is your chance to build something powered by the MultiVM.

## $15,000 for Stylus builders on Arbitrum Sepolia

We’re offering a total grant pool of $15,000, which will be distributed among 10 projects. Each selected project will receive a grant of $1,500. By offering a larger number of grants, we aim to encourage a wide breadth of developers and teams to participate.

## Why Stylus?

Stylus is a game-changer for the EVM, empowering developers in the Arbitrum ecosystem to write smart contracts in a variety of languages, including Rust. By leveraging the power of the WASM VM, Stylus contracts offer unparalleled efficiency, with 10x cheaper compute and memory compared to traditional EVM contracts.

Moreover, Stylus contracts are fully interoperable with the EVM, meaning you can seamlessly integrate them with existing Arbitrum protocols.

## Who is the Stylus Blitz for?

The Stylus Blitz is open to developers from all backgrounds who are eager to explore the possibilities of Stylus contracts. Whether you’re interested in experimenting with Stylus-specific use cases that go beyond the capabilities of Solidity, or you’re looking to migrate your existing Solidity protocols to Stylus to save on gas costs, the Blitz is for you.

We encourage developers with a passion for innovation and a desire to push the boundaries of smart contract development to participate. If that sounds like you, join us in the Stylus Blitz Hackathon and be part of the revolution in smart contract development.

## Blitz Timeline

The Stylus Blitz Hackathon will run for approximately two weeks, starting from when Stylus hits Arbitrum Sepolia on June 17, 2024, until June 30, 2024. During this time, you’ll have the opportunity to build and deploy your own Stylus contracts.

The project submission window will open for the last week of the build timeline, from June 24, 2024, to June 30, 2024. Our judges will then have one week, from July 1, 2024, to July 7, 2024, to evaluate the submissions and select the grant recipients.

* Kick Off Livestream Q&A Session: Tuesday, June 18, 2024 12:00pm ETWatch it now!
* Stylus Blitz Official Build Time: June 17, 2024 to June 30, 2024
* Project Submission Window: June 24, 2024 to June 30, 2024
* Judging Period: July 1, 2024 to July 7, 2024
* Selected Projects Announced: July 8, 2024
* Grants will be paid within 30 days of announcing winners

## Judging

The project submission window will open for the last week of the event. During this time, participants will have the opportunity to submit their Stylus projects for review. The judges will then have an additional week to carefully review the submissions and select the 10 projects that will receive the grants.

You can submit your project submissionshere.

## Eligibility Requirements

To be eligible for the Stylus Blitz grants, your project must meet the following criteria:

* It must be a Stylus contract deployed on Arbitrum Sepolia.
* Tooling and infrastructure projects that support Arbitrum Stylus also qualify
* Submissions must be made by the original developer(s)
* Preference will be given to Stylus contracts that interact with other EVM contracts

ViewPrivacy PolicyandTerms and Conditions.

## Resources

Get ready to build, innovate, and make your mark with Stylus on Arbitrum Sepolia! If you need some help along the way, theArbitrum Stylus Hacker Toolkithas everything you’ll need. Here are a few starter links:

* DocumentationStylus: A Gentle Introduction
* Stylus SDK Repohttps://github.com/OffchainLabs/stylus-sdk-rs

### Submit your projectshere. Follow us on X (@arbitrum,@arbitrumcoreand@ArbitrumDevs) and for the latest updates from the Arbitrum ecosystem.

URL: https://blog.arbitrum.io/introducing-frame-it-an-arbitrum-x-farcaster-buildathon/

# Introducing Frame It: An Arbitrum x Farcaster Buildathon

We’re excited to announce that Arbitrum transaction support is now live on Farcaster!

To celebrate Arbitrum’s integration on Farcaster, we’re hosting Frame It: A Buildathon for developers to create Frames, with $500,000 in retroactive rewards. Starting now you can build Frames with direct Arbitrum transaction support giving Frame builders and users direct access to one of the biggest blockchain communities, Arbitrum.

Boasting a user base of over 350,000 accounts and over 59 million casts according tofarcaster.network, Farcaster is leading the charge of bringing social onchain. Combine this with well over 600 teams building on Arbitrum and ever growing community, we’re excited to see what builders will be able to create as a result of this integration.

## Rewards

In total we’ll be allocating $500,000 total for Frame devs. $450,000 for Frame It and $50,000 reserved for IRL events such as Frameathons, meetups, workshops, etc. The first Farcaster x Arbitrum Frameathon will be held in NYC with $20,000 available in prizes for those who attend and create Frames! Details to be announced soon.

As for Frame It, builders will have the opportunity to have their Frames embedded in casts by the main Arbitrum account on Warpcast.

## Eligibility

For Frame builders, we encourage you to get creative and think about what will drive usage for your Frame. You could build an NFT minter, a token deployer, put your existing DeFi app into a frame, etc. The point is to get creative and build what hasn’t been built before!

Eligibility details:

* Frames must have an onchain component that lives on Arbitrum One (in-frame txs)
* Frames that interact with Arbitrum Nova or other Arbitrum Orbit chains also may qualify
* Frame tooling / infrastructure that supports Arbitrum also qualifies
* Frames submissions must be by the original developer
* Frames must be deployed and live, bonus points for ones that go viral

Please allow for up to 4 weeks for review of your Frame to see if it is eligible for retroactive rewards. Reward amount per Frame will vary depending on the impact of the Frame both onchain and socially, alongside how much remains of the initial budget.

Epoch 1 starts now and ends in 2 weeks on June 4th at 12pm EST. Each epoch will last for 2 weeks and end at 12pm EST on the last day of the epoch. Amount of epochs vary depending on the budget left within the campaign.

You can submit your Frame for reviewhere.

## Resources

We can’t wait to see what you’ll create. So, here are some links that might help you during this event.

* Make sure you’re following us on Farcasterhere.
* To get started on building with Frames, check out Farcaster’s docshere.
* If you’ve never built on Arbitrum before, you can check out some exampletutorialsto get started.

## FAQ

* How long willFrame Itlast?Frame It will be roughly 9 epochs long or 18 weeks, mainly depending on how much funding is spent each week, which will be a product of how many frames are created and submitted.

Epoch 1 ends June 4th, 12pm ESTEpoch 2 starts June 4th 12pm EST and lasts until June 18th 12pm ESTEpoch 3 starts June 18th 12pm ESt and lasts until July 2nd 12pm EST.

* How winners are elected or how will the pool prize be divided?

The Arbtitrum Foundation will be hand selecting frames that meet the criteria. If builders go above and beyond just creating the frame, like if the frame goes viral or there’s a lot of usage, then a higher price will be rewarded.

Create more, build faster, with the freedom of Arbitrum, on Farcaster.

URL: https://blog.arbitrum.io/arbitrum-bold-testnet-live-the-next-step-in-decentralization/

# Arbitrum BOLD Testnet Live: The Next Step in Decentralization

Written by Raul Jordan, Derek Lee, David Dennis

Offchain Labs is thrilled to announce another milestone in the evolution of Arbitrum: the testnet availability of Arbitrum BOLD — the next-generation dispute resolution protocol with working, interactive fraud proofs for optimistic rollups. Building upon the foundation laid in ouroriginal announcement of BOLD on August 3, 2023, this announcement marks another step towards fully permissionless validation on Arbitrum chains and greater decentralization.

Fraud proofs on rollups are only as useful as the dispute process that runs them. Arbitrum has been secured using fraud proofs in production from day-one, and the Offchain Labs team has continued to iterate on creating a dispute resolution protocol for Arbitrum that is permissionless, safe, and solves many of the pitfalls other designs suffer from. BOLD guarantees a fixed upper-bound on the confirmation of Arbitrum states on Ethereum and allows a single, well-resourced party to defend claims against many adversaries without needing to play 1-vs-1 games against them.

Arbitrum has always been committed to scalability, efficiency, and security. As part of Offchain Labs’ comprehensive plan to ensure BOLD is rigorously tested and robust in design, we’ve deployed the implementation of BOLD on a public testnet. The BOLD-enabled public testnet validates and posts assertions to Ethereum Sepolia and gives the community a chance to deploy a BOLD validator to see this bleeding-edge dispute protocol in action. Shortly after, we expect a proposal will be made to activate BOLD on Arbitrum Sepolia, followed by a Tally vote.

## Why is permissionless validation important for decentralization & Arbitrum?

So, what exactly does permissionless validation mean for Arbitrum? In essence, it empowers anyone to secure claims made about Arbitrum’s state on Ethereum. That is, withdrawals from Arbitrum back to Ethereum can be verified or challenged by anyone in the world, ensuring the correct history always remains correct. Currently, Arbitrum validators are allow-listed, but with BOLD, the use of a permissioned list of validators will no longer be necessary. This democratization of validation will not only enhance the security and resilience of the network, but also foster greater decentralization and resiliency within the ecosystem.

BOLD’s benefits for the Arbitrum community include:

* Permissionless Validation: Participants can run their own validator nodes and contribute to the consensus process, helping to secure the network and validate withdrawals back to Ethereum.
* Enhanced Security:BOLD taps into the 10 years of experience the Offchain Labs team has in designing interactive proving protocols to create a new system for Arbitrum that is resilient todelay attacksand allows a single, well-resourced honest party to defeat many evil parties without needing to play 1-vs-1 games. Honest BOLD validators will win against evil claims within a fixed upper-bound of 7 days and have their stakes reimbursed when disputes are resolved, so long as they follow the protocol.
* Pooled Challenge Funding: Issuing a challenge requires significant funding. However, anyone can create atrustless smart contractto pool funds together and defend Arbitrum against invalid claims, or challenge invalid claims posted by others.
* Mathematical Foundations: After over a year in development, the Offchain Labs research team has producedformal safety proofs for BOLD. The BOLD smart contracts are currently being thoroughly audited by Trail of Bits.

## Getting Closer to Stage Two

In his recent blog, “Ethereum has blobs. Where do we go from here?”Vitalik writes about many aspects of improving Ethereum L2s, including the need for continuous improvements to security and decentralization.

BOLD has the potential to take another major step for Arbitrum along this journey by addressing the (currently yellow) State Validation wedge in theL2 Beatrisk analysis pie chart. L2 Beat’s commentary currently notes:

Fraud proofs allow 14 WHITELISTED actors watching the chain to prove that the state is incorrect.

By replacing the allowlisted validators with permissionless validators via BOLD, Arbitrum chains will be able to address this particular concern and move further towards greater decentralization and achieve even greater Ethereum alignment.

## This sounds cool! How do I learn more?

The launch of BOLD on a public testnet is the first step of many on the roadmap to bring BOLD to mainnet readiness and, eventually, to Arbitrum One and Nova via a DAO vote. Below are a few great resources to learn more about BOLD and stay up-to-date with product updates!

* Read theBOLD Gentle Introduction docsfor a primer on how BOLD works and why we built it for Arbitrum!
* To view BOLD’s current implementation & specification, check out theBOLD Github repository!
* Get first-hand experience running an honest or malicious BOLD validator (i.e. either to defend a network or attack a network) by followingthis guide.
* Check out theBOLD testnet block explorer!
* Read the updatedBOLD whitepaper, which covers the formal specifications of BOLD alongside mathematical safety proofs!
* A deep dive into how BOLD is implemented can be found in theTechnical Deep Dive into Arbitrum BOLD
* If you’re interested in the economics underlying BOLD disputes, see “The Economics of Disputes in Arbitrum BOLD”

In addition, we’ll be having a live AMA on “Uncovering BOLD & Permissionless Validation” on Thursday, April 18th at 11:30 AM EThere, where the big brains behind BOLD will answer questions.

URL: https://blog.arbitrum.io/arbos-20-atlas-now-live-bringing-ethereum-dencun-support-to-arbitrum-chains/

# ArbOS 20 “Atlas” Now Live: Bringing Ethereum Dencun Support to Arbitrum Chains

Written by Terence Tsao and Lee Bousfield — March 14, 2024

We’re elated to announce the much-anticipated release of ArbOS 20, affectionately dubbed “Atlas.” This milestone marks a significant leap forward for the Arbitrum ecosystem, introducing Ethereum Dencun support (EIP-4844, EIP-1153, EIP-5656, and EIP-6780) to Arbitrum chains, paving the way for significantly improved costs and new use cases. ArbOS Atlas is the first named release in a series that will be named after the moons of planets, starting with the letter “A”, symbolizing our commitment to exploration, discovery, and the limitless potential of the Arbitrum ecosystem.

## Understanding ArbOS: Powering Arbitrum Nitro

Arbitrum is powered by nodes that run Nitro. ArbOS is one part of Nitro that provides L2-specific logic, including producing and executing L2 blocks, managing the accounting for L1 costs, and supporting critical bridging functionalities.

With each iteration, ArbOS will evolve to bring new core technologies that will be common to all Arbitrum chains.

## Bringing Ethereum Dencun to Arbitrum

ArbOS Atlas makes Arbitrum chains ready to support the Ethereum Dencun update that went live on Ethereum mainnet at 13:55 UTC, March 13, 2024. With ArbOS Atlas, developers and users on Arbitrum alike will benefit.

The biggest impact for most will be a big change in Ethereum L2 transaction costs. ArbOS Atlas provides Arbitrum chains with the ability to post user transactions to Ethereum using a new type of Ethereum transaction in the form of a Blob, reduce costs of those transactions (EIP-4844), new storage opcodes for cheaper transient data (EIP-1153), and cheaper memory copying (EIP-5656).

ArbOS Atlas also adds support for EIP-6780, aligning Arbitrum with EVM’s security posture and laying the groundwork for future EVM improvements.

Applications on Arbitrum will not have to be modified or take any explicit action to get the cost benefits of EIP-4844 (i.e. the whole chain opts-in with ArbOS 20 “Atlas”).

ArbOS Atlas has been audited, voted on, and approved by the Arbitrum DAO for all DAO-governed chains in a fully decentralized, on-chain voting process.

In addition to applying to DAO-governed chains, ArbOS Atlas can be deployed by Orbit chains independently of the Arbitrum DAO governance process; Orbit L2 roll-up chains that deploy Atlas will receive the cost benefits of EIP-4844, while all Orbit chains can upgrade to benefit from the other features in ArbOS Atlas. The ability of self-governed Orbit L2 chains to deploy ArbOS Atlas whenever they’re technically ready is an example of the freedom granted by theArbitrum Expansion Program.

Because Arbitrum chains are highly customizable and can be deployed in a number of different configurations, Decun will have different impacts depending upon your implementation:

* All L3 Rollup chains on top of Arbitrum One will see lower fees. No additional action is required.
* L3 chains on top of Arbitrum One that use alternative data availability (DA), such as Arbitrum AnyTrust, Avail, Celestia, EigenDA, or NEAR DA, will see fees unchanged.
* Self-governed Orbit L2 rollup chains must deploy ArbOS Atlas and also switch on blob posting to see lower fees. L2 rollup chains that don’t dobothwon’t see any fee changes.
* Orbit L2 chains that use alternative DA will also see fees unchanged.

Additionally, as part of several changes rolled out in ArbOS Atlas, a security fix was rolled out to the Sequencer Inbox contract. This change addressed an arithmetic overflow vulnerability that would allow a Sequencer to disable the force inclusion mechanism. More information can be foundhere.

## Additional Arbitrum gas cost reductions

On Layer 2 and Layer 3 chains, fees are a combination of two parts: execution gas, which charges for the use of resources on the L2/L3 chain itself, and data posting gas, which reflects the cost of posting data.

As EIP-4844 rolls out on Ethereum, L1 data posting costs are expected to be dramatically reduced. However, predicting the exact size of this reduction is challenging at this moment,as detailed by our research team.

In addition to reducing data posting fees via EIP-4844, ArbOS Atlas is also introducingmajor reductions in other fees for Arbitrum One, expected to be activated by March 18, 2024:

* L1 surplus fee.Reduce the surplus fee per compressed byte from 32 gwei to 0.
* L2 base fee.Reduce the minimum from 0.1 gwei to 0.01 gwei.

Note that this isadditiveto the reduction in L1 data posting fees that come with EIP-4844.

Net result: the combination of EIP-4844 and the forthcoming reduction in Arbitrum execution fees are expected to dramatically reduce transaction costs, benefitting all users.

## Will stack with Arbitrum Stylus for even more savings

Pending DAO approval, Stylus is expected to become Arbitrum mainnet-ready in 2024. The cheaper transaction costs enabled via EIP-4844 and other ArbOS Atlas fee changes are expected to combine with Stylus’ potential 10x computational efficiencies and 100x memory cost improvements, for even greater savings than a typical Ethereum L2.

In combination with Stylus and EVM+, applications and use cases previously considered impossible to ship on Arbitrum are now within reach — especially those that produce high transaction volumes like Gaming, SocialFi, and exchanges.

## How Offchain Labs contributed to Ethereum Dencun

The ArbOS Atlas upgrade is able to take advantage of Dencun’s new lower-cost fee market thanks to collaboration across L1 and L2, with Offchain Labs teams working to upgrade both Prysm—Offchain Lab’s Ethereum consensus layer software—and Arbitrum Nitro—the execution layer software that powers Arbitrum One. The implementations built by consensus layer client teams play a vital role in the specification process, testing the feasibility of designs created by Ethereum researchers, or the client teams themselves. In the case of Dencun, Prysm was the first team to release a prototype of a draft version of EIP-4844, and this prototype played a vital role in answering questions about how to add blob data to the existing gossip networks, enabling experiments to be conducted with real data on real networks. Prysm participated in all devnet and testnet forks and gave feedback on spec choices that resulted in a more secure final design.

To get a deeper dive into the changes that Dencun will bring to Ethereum mainnet and its impact on Arbitrum with ArbOS Atlas, check out this Offchain Labs AMA:

Uncovering Dencun • Feb 22, 2024

## ArbOS Atlas Roll-Up As a Service (RaaS) providers committed to Ethereum Dencun

If you’re a builder, know that Arbitrum RaaS providers Altlayer, Caldera, Conduit, and Gelato are committed to upgrading your existing Orbit chains to ArbOS Atlas and providing Ethereum Dencun support.

## To learn more about ArbOS Atlas and Ethereum Dencun support for Arbitrum

Tune into our upcoming live stream on Friday, March 15 at 9:30am (ET) / 1:30pm (UTC):

ArbOS 20 Atlas & Dencun Livestream • Mar 15, 2024

URL: https://blog.arbitrum.io/introducing-arbitrum-arcade/

# Introducing Arbitrum Arcade

Introducing the Arbitrum Arcade, an Onchain Gameathon designed to showcase Web3's most innovative gaming experiences, provide exposure and prizes to up-and-coming content creators, and bring in-game achievements onchain withClique, built on top ofEAS(Ethereum Attestation Service).

Arbitrum Arcade will kick off on March 11th through theArbitrum Portal. Join us for an info session on Tuesday, March 5th, to learn more!

## Prizes and Rewards

As a content creator, you’ll have the chance to have your content featured on the official Arbitrum X account, compete for the chance to win a custom gaming PC, and receive a share of a $200,000 grant prize pool in USD dedicated to creators!

Sign upherebetween now and March 4th, 12pm EST to be eligible for consideration as an Arbitrum Arcade creator.

As a user you’ll have the opportunity to try out 3+ games every week, use Clique to create attestations about your progress across games, and mint an NFT onOpenSeaat the end of the campaign signifying your participation.

As a gaming team, deploy your game on Arbitrum One, Nova, or on an Orbit chain by April 15th, and you’ll have the opportunity to join in on the last week of the campaign after applyinghere.

Check out all the details about joining the Arcade below!

## Arcade Lineup

Each chapter will last for one week, totaling 8 weeks, featuring a lineup of over 24 games native to the Arbitrum ecosystem and pushing the boundaries of what it means to game onchain.

Ai Arena, Army of Tactics, BattleFly, BattlePlan!, Bitmates, Cosmik Battle, Dininho, Forgotten Runiverse, Kaiju Cards, Knights of the Ether, Kuroro Beasts, Lost Donkeys, Mighty Action Heroes, Minters World, Monkey Empire, Pirate Nation, Realm, SankoGameCorp, Tales of Elleria, The Beacon, Treasure, Xai, Zeeverse, and ZTX are all involved in the first 7 chapters of the Arbitrum Arcade.

Gaming projects not included in the first seven chapters will have the opportunity to join the fun in the last chapter, chapter eight.

If you’re a gaming project and wish to be eligible for consideration in the Arcade, (1) launch your game on Arbitrum Nova or One between now and April 15th, (2) apply to be listed on the Arbitrum Portal, and (3) submit your interest in joining the Arbitrum Arcadehere.

## Creating with Creators

A big part of the Arbitrum Arcade revolves around content creation. To uplift emerging content creators and reward those who generate the most engagement for both themselves and the games, we’ve allocated $200,000 in grants to be equally distributed amongst all creators who participate.

In addition to the $200,000 worth of grants, we’re also giving away 3 fully loaded PCs (up to $5,000 in value) so they’ll never have to worry about bitrate again. 😉

1st PC will go to the creator with the highest amount of referrals

2nd PC will go to the creator with the highest amount of video content produced

* X, Youtube, Twitch, and Sanko TV, Kick, Tik Tok, and Instagram
* MUST include hashtag #ArbitrumArcade across content on all platforms for posts to be eligible

3rd PC goes to the creator with the highest number of impressions generated through the total content produced

* X, Youtube, Twitch, and Sanko TV, Kick, Tik Tok, and Instagram
* MUST include hashtag #ArbitrumArcade across content on all platforms for posts to be eligible

To be a creator as part of the Arbitrum Arcade, creators must have created at least 10 to 5 forms of web3 gaming video content (shorts or full-length videos) from X, Youtube, Tik Tok, or Twitch within the last 60 days (before 2/27/2024).

To remain eligible for a part of the $200,000 worth of grants and PC giveaway, content creators must produce at least 1 piece of web3 gaming video content per week related to the participating games for that chapter. Winners will be decided following a manual review of content produced during the campaign. Creators can applyhere.

The Arbitrum Foundation will also join the fun through weekly live streams simulcasted onXandYoutube. We’re excited to have some of web3’s most popular content creators streaming with us throughout the Arcade — stay tuned for the names to be announced.

## Onchain Achievements

With the kickoff of the Arbitrum Arcade, we’re introducing an onchain gaming system built by Clique on top of EAS. This system is designed for Arbitrum gamers who want to show off their onchain and offchain achievements across their favorite games within the ecosystem!

EAS on Arbitrum Nova is utilized, allowing open-source contributions from anyone in the community at the infrastructure level. This will live beyond the Arbitrum Arcade, serving as a public good for the Arbitrum community and any gaming community interested in building on top of it for their own gamers.

## Preparing for Arbitrum Arcade

Arbitrum Arcade officially begins on Monday, March 11th! If you’re a user who’s interested in participating, ensure you have ETH to cover gas fees on Arbitrum One and Nova. If you’re a content creator, ensure your camera is ready to go, and your mic’s gain is turned up, and apply to join the Arcade. If you’re a gaming team looking to be part of the campaign, make sure to launch between now and the end of Chapter 4.

GG fam, see you March 11th in the #ArbitrumArcade. 🫡 👾

URL: https://blog.arbitrum.io/why-im-still-optimistic-about-optimistic/

# Why I’m Still Optimistic About Optimistic

Arbitrum uses an optimistic rollup protocol. People often ask why we chose optimistic for Arbitrum, and whether we expect Arbitrum to switch to ZK proving.I have written about this before, but that was almost two years ago. Here’s my current personal view. Others may disagree.

I’m a big believer in pragmatism when designing systems. Rather than falling in love with one technical approach and applying it whatever the cost, we should ask which approach best meets the needs of our users and developers. The best approach might change over time, and if so we should be willing to switch.

We chose optimistic proving for Arbitrum as the pragmatic choice, and I believe that optimistic is still a better choice than ZK proving, for meeting the needs of users and developers. Simply put, optimistic is cheaper, simpler, and more flexible than ZK. I’ll expand on each of those claims below.

That said, if something changed and ZK became the better choice, I would argue that Arbitrum should switch. I don’t expect that to happen any time soon.

## Optimistic has lower cost

The beauty of optimistic proving is that the proving cost can always be zero for honest parties. In the common case, no proof is necessary because only true claims are posted, so there is never a challenge. If there is a challenge, there is some cost to resolving it — but every dishonest party will lose the challenge, and therefore they will forfeit a stake, which can be used to pay the cost of the challenge.

Optimistic protocols rely on having multiple parties executing the chain, so that they can check up on any posted claims about the results of execution. In other words, the chain needs to have nodes. But any chain with non-trivial usage will have plenty of ordinary nodes, run by users or infrastructure providers, in order to support the chain’s activity. Those nodes will all naturally serve as watchtowers for the optimistic protocol.

By contrast, ZK requires a cryptographic proof to be generated for every posted claim, and that proof must be verified on Layer 1. Over time, ZK researchers have reduced the cost of generating these proofs, but they can never be reduced to zero.

In fact, ZK proofs are quite expensive by comparison with optimistic execution. If a smart contract does (say) a bitwise AND operation, every validator of an optimistic system just does a bitwise AND. A ZK prover needs to do the bitwise AND, then do a large number of expensive cryptographic operations to ZK-prove the result of the bitwise AND instruction. If Alice and Bob go to the food market, Alice buys a grape, and Bob buys a grape and a watermelon, then Alice’s cost will always be lower than Bob’s.

In both optimistic and ZK rollups, ordinary nodes need to execute every transaction in order to know the chain’s history as it evolves. So that part is no different.

Bottom line: optimistic has lower cost.

## Optimistic is simpler

In software engineering, and especially in security engineering, simpler is better. Complexity increases security risk, and makes everything slower and more difficult.

There’s no question that optimistic proving is simpler than ZK proving. Optimistic proving can be explained to, and understood by, almost any developer, whereas ZK proving relies on complex mathematics as well as deep and subtle cryptography theorems that are understood by very few people. Even professors who teach cryptography have to work hard to understand ZK proof systems.

## Optimistic is more flexible

Proving is a necessity for any L2 chain. But proving is not the only thing that users and developers want. They want new features — and those are easier and faster to build on optimistic systems.

A good example isArbitrum Stylus, which allows developers to write smart contracts in common languages like Rust and C++, and run those programs in a WASM virtual machine, on the same chain as EVM contracts, with full composability. A feature like Stylus is challenging to build, requiring integration of two virtual machines into a single seamless system.

One reason features like this can be built in optimistic systems is that optimistic implementations can use standard programming languages and tools, which makes it easier to evolve software. By contrast, ZK requires different programming tools, either to build ZK circuits (or constraint sets) manually or to use some intermediate compiler to reduce everything to circuits. Custom tools and programming approaches will always be slower and more cumbersome to use, which translates into slower progress in evolving the whole system.

The simplicity of optimistic systems translates into more flexibility and faster evolution and improvement.

## Finality time is the same

People often ask about the finality time for optimistic vs ZK rollups. The answer is that they are the same.

A transaction has finality when the result of the transaction is fully determined and all participants in the protocol know the result. Rollup chains, whether optimistic or ZK, operate in two phases: first, a sequencer publishes and records a sequence of transactions that have arrived at the chain; then second, an execution and settlement layer computes and proves the result of executing the transactions in the sequence, one by one in order. Finality occurs when a transaction has a finalized position in the transaction sequence — at that point the transaction’s result is fully determined by the finalized transaction sequence, and everyone knows that result.

Because finality is determined by the sequencer’s output being posted to Ethereum (which is the same process in optimistic as in ZK), rather than the prover (which only operates later), optimistic and ZK systems have exactly the same finality behavior. Any finality time that one can achieve, the other can achieve equally.

## Cross-chain communication time

The one place where ZK has an inherent advantage is in the latency of cross-chain communication, that is, how long it takes for a contract on one chain to send a message trustlessly to a contract on another chain.

Cross-chain transfers of fungible assets (ETH or tokens) typically happen via fast bridging services whose operation doesn’t depend on optimistic vs ZK proving, so ordinary users won’t see any difference in cross-chain asset transfer time.

For other types of cross-chain messages, ZK can be faster, because the ZK chain can checkpoint its state to a parent chain (i.e., to Ethereum for an L2) more quickly than an optimistic chain can. This means that trustless cross-chain messaging, for use cases other than asset transfer, will be faster if the sending chain uses ZK proving.

At this point, it’s not clear how important that difference will turn out to be. Today the vast majority of cross-chain activity is asset transfer, where there isn’t much difference in user experience.

## The bottom line

For me, the answer is clear: the advantages of optimistic proving — low cost, simplicity, and flexibility — outweigh the one area where ZK is better (speed of non-asset-transfer cross-chain functionalities).

That’s why I’m happy that Arbitrum is still using optimistic proving.

URL: https://blog.arbitrum.io/arbitrum-odyssey-reignited/

# Arbitrum Odyssey: Reignited

Tldr:The Arbitrum Odyssey is back,REIGNITED!In collaboration withGalxe, you’ll go through a 7-week excursion that’ll have you exploring some of the biggest communities in the Arbitrum ecosystem and collect custom badges, created by Ratwell and frens, marking checkpoints throughout your journey.

Key Takeaways:

* Arbitrum Odyssey: Reignited startsSeptember 26th, 2023. Mission details can be foundhere.
* Hop Protocol is the winning bridge protocol from bridge week!
* TheArbitrum Portalhas been completely overhauled and revamped!
* There will be no airdrop, only the ability to collect badges once completing a mission.
* FAQis located at the bottom of the Odyssey pagehere

### What is the Arbitrum Odyssey: Reignited?

Starting September 26th, for 7 weeks you’ll be able to explore 13 different projects through completing missions that they assign within the Arbitrum ecosystem. On top of learning more about the ecosystem and the projects within it, you’ll receive custom badges made by Ratwell and frens, members of the community, for completing these missions. A mission could be anything from utilizing a DeFi app, to completing a game!

Each week you’ll find out the missions at hand. In total there are 16 badges that can be collected, 13 badges obtainable after completing each project’s mission, 1 if you participated during bridge week last year, 1 if you bridged using Hop Protocol during bridge week, and 1 final badge if you manage to collect 12 out of those 15 badges. The Arbitrum Odyssey: Reignited will begin on week 1 (see table below), starting with GMX. You can also claim your Hop badgenowif you used it last year during bridge week.

Alongside the re-release of the Arbitrum Odyssey, theArbitrum Portalhas also received a huge overhaul and will be the home base for all Odyssey related details! See below for the general outline of your journey.

### Let’s bring it back..

The originalArbitrum Odyssey was announcedone year ago. It was a 2-month long initiative that gave users the ability to experience different Arbitrum ecosystem projects and in return, receive exclusive NFTs designed by Ratwell & Sugoi. 14 projects were voted in by the community on Snapshot to participate. At that time Arbitrum was in its pre-Nitro era, meaning it was running on roughly 1 Ethereum worth of capacity.

Bridge week was a smashing success and ended up with Hop Protocol being the most popular bridge by user count! However when the second week of the Odyssey commenced, congestion rose to levels never seen before due to a combination of the amount of users completing transactions on-chain and the complexity of the smart contracts they were interacting with.

In favor of a better quality of life for the broader ecosystem, the campaign was paused until Arbitrum One went through its Nitro upgrade, giving the chain roughly 7x the capacity of Ethereum.

### So why resume the Arbitrum Odyssey?

In between the pause of the Arbitrum Odyssey and now, there has been an overwhelming amount of awareness and education the campaign brought to new users. In addition, experiencing the Arbitrum ecosystem for the first time. Many had never heard of particular involved projects, and would’ve never even thought to try them out if it wasn’t for this initiative. So while it’s been close to 1 year since the pause of the Odyssey, it’s important to do right by the teams involved, and community members alike. Thus the Arbitrum Odyssey will bereignited.

There will be no airdrop or reward of any kind. Badges are the only things users can collect once completing a mission. (and of course the fun along the way 😉).

### What about projects that aren’t part of the Arbitrum Odyssey?

There have been a plethora of new teams and projects that have deployed on Arbitrum One since the beginning of the Odyssey. With that in mind, It’s important to stress that this will not be the last ecosystem-wide initiative that will happen, in fact, quite the contrary!

Additionally, any projects running their own initiatives alongside the Arbitrum Odyssey: Reignited will have the opportunity to have their initiative featured in theArbitrum Odyssey portal page! Please reach out to the team to have your initiative featured (Your project must be listed on the portal to be considered, submissions are subject to approval).

### What If I completed missions before the Arbitrum Odyssey paused?

If you did participate in the Odyssey before it was paused and..

* Bridged over to Arbitrum One using Hop Protocol during bridge week, then you can claim your badge right now,here.
* If you completed a GMX mission during their week before the pause then you’ll have to complete the new mission when it’s released next week, September 26th, 2023.

### View your badges on OpenSea

Once you’ve completed a mission and claimed your badge, you can view them on yourOpenSeaprofile. Here you’ll be able to view and collect all of the badges you acquire throughout your journey on the Arbitrum Odyssey: Reignited!

## WHERE DO I GET STARTED??

For information on the current status of the Arbitrum Odyssey, make sure to visit the Arbitrum Odyssey page on the new and improved Arbitrum Portal!

Information on the missions each week will be updated once the week commences. So make sure to stay tuned on Twitter, Discord, and theArbitrum Odyssey pageon the Arbitrum Portal for all the latest updates.

See you September 26th frens, your journey awaits.

URL: https://blog.arbitrum.io/stylus-now-live-one-chain-many-languages/

# Stylus Now Live — One Chain, Many Languages

Written by Rachel Bousfield, Austin Marrazza, David Dennis — August 31, 2023

TL;DR: Today we releasedthe codeand public testnet for Arbitrum Stylus, allowing developers to use both traditional EVM tools and WASM-compatible languages like Rust, C, and C++ to build applications on Arbitrum Nitro chains. In addition, by improving computational, storage, and memory efficiency, Stylus dramatically lowers gas costs and enables new resource-intensive blockchain use cases like alternative signature schemes, larger generative art libraries, C++ based gaming, and compute-heavy AI models that were previously impractical. The open source SDK is available now, and there will be a Stylus Hackathon with$20,000in bounties at ETHGlobal NY.

This announcement blog will provide the announcement highlights—learn more about Stylus on the newArbitrum website, and check outStylus: A Gentle Introductionfor a deeper technical exploration.

## Why We’re Stoked About Stylus

This time last year we took a massive leap forward with the launch of Arbitrum Nitro; today we’re taking another big leap with Stylus.

At the heart of Stylus isEVM+:bringing the best of both EVM and WASM worlds. Developers still get all of the benefits of the EVM, including the ecosystem and liquidity, while getting efficiency improvements and access to existing libraries in Rust, C, and C++. All without changing anything about how the EVM works. EVM equivalence is no longer the ceiling, it’s the floor.

Comparing EVM with EVM+

With the ability to expand Arbitrum development from about20,000 Solidity developerstomillions of developersusing Rust and C, while retaining full interoperability and composability with traditional EVM contracts, enabling faster execution times, lower gas, new use cases — all on themost secure, most decentralizedandwidely usedEthereum L2 chain — we’re excited to collaborate with the community on what comes next.

And to help kickstart the innovation, StylusR&D grantsare available from the Arbitrum Foundation.

You’re going to hear a lot from us about Stylus in the coming months, so let’s go through some highlights….

## What Is Being Announced?

The availability of the live testnet for Arbitrum Stylus, a new technical implementation that allows developers to build smart contracts in Rust, C, and C++, alongside previously offered EVM languages. We’ve also made the code publicly available on our Github repositories.

Start building with Stylus now, and we invite you to join the Stylus community on Discord and share your feedback and experiences.

## Who is Stylus For?

Stylus is designed for both experienced Web 3 developers interested in using additional WASM-compatible languages such as Rust, C, and C++ with Arbitrum chains and for other developers who may be new to blockchain development.

Stylus is for Solidity developers who want cheaper compute and memory for their dApp.

Stylus is for blockchain developers familiar with Rust environments such as Solana and NEAR, who want the benefits of working in the EVM.

And if you’re looking to deploy industry-standard cryptography libraries for curves like secp256r1, Stylus is for you, too.

## What Are the Key Features of Stylus?

* Use Popular Programming Languages for native Ethereum Development: Utilize popular WASM-compatible languages like Rust, C, and C++ to build your application on Arbitrum’s large ecosystem, allowing you to combine popular Web 2 programming languages with the most widely used smart contract L2.

Declare contracts just like Solidity

* One Chain, Many Languages: Stylus lets you use one chain, with multiple programming languages. Developers no longer have to choose a blockchain that supports their preferred programming language; it all happens on one.

Create nicely-typed methods

* Fully Composable: Solidity contracts and WASM programs are completely interoperable. If working in Solidity, a developer can call a Rust program or rely on another dependency in a different language. If working in Rust, all Solidity functionalities are accessible out of the box
* Faster Compute, Lower Costs: With Stylus, Rust, C, and C++, WASM compute operations run much faster than their Solidity equivalents. Computation is over10ximproved. Memory is over100ximproved.
* Enables New Use Cases: Stylus’ computational speed, improved cost efficiency, and access to the mature WASM ecosystem open up new EVM use cases that were previously impractical. Cryptography libraries can now be deployed as custom precompiles, permissionlessly. RAM-intensive generative art libraries, bringing existing games written in C++ on chain, and compute-heavy AI models all become more accessible.

Enhanced scalability for new blockchain use cases

* Safer by Design: WASM programs written using the Stylus Rust SDK are safer with opt-in reentrancy. Reentrancy is a common vulnerability that developers can only attempt to mitigate in Solidity. In Stylus, reentrancy is disabled by default unless intentionally overridden.

## What Makes Stylus Unique?

* Built for Arbitrum: Stylus allows you to develop in WASM while still retaining the maturity, security, and scalability of Arbitrum, the largest scaling solution for Ethereum.
* Works with Arbitrum Orbit L3 Chains: For even greater customization, Stylus can be used with the Arbitrum Orbit development framework, allowing you to support popular WASM-compatible programming languages on your dedicated Orbit chain.
* Largest Developer and Partner Community: By supporting Arbitrum chains, Stylus is positioned to leverage the support of the largest Ethereum L2 ecosystem of protocols, communities, and partners.
* Out-of-the-gate Blockchain and Rust Tooling Support: Stylus lets you start building right away, with the initial testnet launch including support for a block explorer and a Rust CLI tool. Stylus also includesopen source SDKsfor Rust, C, and C++, which can be potentially extended to other languages, such as Move, Sway, Cairo, and Go, as well.

## How Does Stylus Save Money & Time?

* Cut Your Gas Bill: Compared to using Solidity, WASM programs are much more efficient, further reducing gas costs
* Reduces Memory and Storage Fees: In addition to more efficient compute ops leading to lower gas costs, memory is also much cheaper in Stylus. Allocating megabytes of RAM costs100–500xless than it would in Solidity. Stylus also can automatically use Rust’s borrow checker to safely reduce storage ops, further reducing costs.
* Use Existing Libraries:Avoid having to re-write code that achieves the same functionality as libraries that have already been written. Deploy existing libraries in Rust, C, and C++ with minimal modifications

## What’s Next?

* Trail of Bits Audit:Trails of Bits will be auditing the Stylus source code to ensure the safety of the contracts, as well as theStylus SDKs.
* DAO Vote: Since Arbitrum One and Arbitrum Nova are DAO-governed, it will be up to the DAO to vote on upgrading to include Stylus support.
* Join our AMA:On September 7, and check out our most recentStylus talk on YouTubeand bring us questions.
* Win a Juicy Bounty at ETHGlobal NY: We’re going to be awarding$20,000in bounties for Stylus atETHGlobal NY September 22–24, so come join the fun and meet the Stylus team!

URL: https://blog.arbitrum.io/arbitrum-orbit-anytrust-chains/

# Arbitrum Orbit AnyTrust Chains

Written by Lee Bousfield and Olivia Jurkowitz — August 17, 2023

TL;DR: Today we’re making it easier than ever to launch Arbitrum Orbit AnyTrust chains. You can now use the Orbit documents and deployment portal to create a devnet AnyTrust chain that hosts EVM-compatible smart contracts. Orbit Anytrust chains enable ultra low-cost transactions for high-volume use cases.

## Overview

Arbitrum AnyTrust technology is one of the two technologies that you can use today to build Arbitrum Orbit chains (the other being Arbitrum Rollup). Starting today, you can use our open-sourcedeployment toolto launch a local AnyTrust chain that settles to Arbitrum Goerli.

As a refresher, Arbitrum Orbit chains arededicated chainsthat settle to one of Arbitrum’sLayer 2chains:Arbitrum One,Arbitrum Nova, orArbitrum Goerlifor testnets.

You own your Orbit chainand can customize its privacy, permissions, fee token, governance, and more. By creating an Orbit chain you are joining the largest Ethereum L2 ecosystem of protocols, communities, and partners. Learn morehere.

With increasing interest in deploying Orbit chains, we wanted to go over the core benefits of launching an AnyTrust chain in particular, and some new developments to look forward to.

Arbitrum Orbit Deployment Portal

## Who is AnyTrust for?

AnyTrusttechnology was purpose-built for high-volume use cases. Examples of these include:

* Gaming: Users can mint items on-chain at a high frequency, from currency to personalized assets. The recently announcedXai chainis being built specifically for on-chain games.
* Social: Social projects that seek to record interactions on-chain can do so sustainably. For example, Reddit’s community points system operates on Arbitrum Nova, an AnyTrust chain.
* Finance: Companies and protocols with high infrastructure costs can move some of their infra to an Anytrust chain. For example, Premia Finance launched their orderbook on Nova to reduce costs for placing signed orders.

In addition to the examples above, there are new use cases that will be enabled by the high-speed and low-cost of AnyTrust technology. Let us know about the novel use cases you are building bycontacting us.

## Why Should I Choose AnyTrust?

AnyTrust chains enable 1. lower costs in exchange for a minimal extra trust assumption, and 2. faster withdrawals of non-fungible assets, all while benefiting from Ethereum’s security.

### 1. Significantlylower transaction costs,~30–150x cheaper than L1

With Rollup technology, chains put all transaction data on the Ethereum chain as calldata, to ensure that everyone can get the transaction data if they need it. That’s the biggest cost of operating a Rollup chain.

AnyTrust chains however, rely on a Data Availability Committee (DAC) to store calldata. If a quorum of DAC members says that they are storing some transaction data and will provide it to others on demand, then the chain doesn’t need to put that data on Ethereum. This is because the AnyTrust honesty assumption guarantees that there is an honest DAC member who will provide the data to anyone who needs it.

That’s how AnyTrust lowers the cost of L2 transactions.

### 2.Faster withdrawals — from days to minutes (coming soon)

No longer wait 7 days for confirmation. In a Rollup, a validator’s claim about the outcome of transactions must remain pending for a week, so that any validator will have a chance to challenge that claim. That’s why withdrawals (and L2-to-L1 transactions more generally) take a week.

Later this year, alongside our work on theBOLD Protocol, AnyTrust chains will be able to immediately confirm and execute transactions. If a quorum of DAC members says that a claim about transaction outcomes is correct, that claim can be confirmed and executed immediately, because the AnyTrust honesty assumption guarantees that an honest committee member stands behind the claim.

That’s how AnyTrust makes withdrawals faster.

### 3.Custom Fee Tokens (coming soon)

Support for custom fee tokens will be formally added to Arbitrum Nitro in the coming weeks. Initial support will be targeted at AnyTrust chains since the cost of posting data to the settlement layer is incredibly cheap. We’re working on a sustainable model for Rollup chains as well, particularly around managing exchange rates, and will share more details when ready.

This feature allows chains to receive a native ERC20 token as payment for transaction fees instead of ETH. In practice, the fee token will be escrowed on in the bridge contract on the parent chain (Arbitrum One or Nova for Orbit chains) and it will be minted on the Orbit chain as native currency. This feature further enables value capture and flexibility for project teams and their ecosystems.

### 4.Built on Ethereum, with extremely strong security guarantees

A chain is operated by a committee of nodes, with a minimal assumption about how many committee members are honest. As an example, there might be 20 committee members, and an assumption that at least two of them are honest.

This is a much smaller trust assumption compared to conventional BFT sidechains, which require more than ⅔ of the members–that would be 14 out of 20–to be honest. We can reduce the trust requirement from 14 to 2 because of the “fallback to rollup” feature, built on top of Ethereum as explained below.

## How does AnyTrust technology differentiate from Rollup technology?

Arbitrum Rollupis an Optimistic Rollup protocol; it is trustless and permissionless. Part of how these properties are achieved is by requiring all chain data to be posted on Layer 1. This means the availability of this data follows directly from the security properties of Ethereum itself, and, in turn, that any party can participate in validating the chain and ensuring its safety.

By contrast,Arbitrum AnyTrustintroduces a trust assumption in exchange for lower fees; data availability is managed by a Data Availability Committee (DAC), a fixed, permissioned set of entities. We introduce some threshold, K, with the assumption that at least K members of the committee are honest. For simplicity, we’ll hereby assume a committee of size 20 and a K value of 2:

If 19 out of the 20 committee membersandthe Sequencer are malicious and colluding together, they can break the chain’s safety (and, e.g., steal users’ funds); this is the new trust assumption.

If anywhere between 2 and 18 of the committee members are well-behaved, the AnyTrust chain operates in “Rollup mode”; i.e., data gets posted on L1.

In what should be the common and happy case, the system operates without posting the L2 chain’s data on L1, and thus, users pay significantly lower fees. This is the core upside of AnyTrust chains over rollups.

Differences between Rollup and AnyTrust

## What is the fallback to Rollup feature?

If there isn’t a cooperative quorum, then an AnyTrust chain operates as a regular rollup. Data will be posted on the L1 Ethereum chain, and withdrawals will have a delay period, just like on a standard rollup–until the committee resumes operation, and then the chain will switch seamlessly back to the cheaper, faster mode. The switch between “quorum mode” and “rollup mode” happens seamlessly, in both directions.

## How do I start building with AnyTrust technology?

For step-by-step instructions that walk you through the process of configuring and launching your own AnyTrust Orbit devnet chain, visit theQuickstart guideor visit theOrbit chain deployment portaldirectly.

As a reminder, our deployment portal is focused on testing and experimentation, guiding you through the process of launching your own devnet. If you’re interested in launching a mainnet chain or have feedback on the process generally, feel free toget in touchwith our team.

URL: https://blog.arbitrum.io/bold-permissionless-validation-for-arbitrum-chains/

# BOLD, Permissionless Validation for Arbitrum Chains

Written by Ed Felten and Raul Jordan — August 3, 2023

TL;DR: We are announcing BOLD (Bounded Liquidity Delay): a dispute protocol we invented at Offchain Labs that can enablepermissionless validation for Arbitrum chains. The code and specification are now available on Githubhere!

BOLD allows Arbitrum-technology chains to:

1. Guaranteesafety and liveness of their chain
2. Minimizelatency to settle states
3. Preventdishonest parties from raising the cost for honest ones

Today, Optimistic Rollup chains that support fraud proofs, such as Arbitrum One and Nova, settle their state to Ethereum. A set of entities, known as validators, post claims about the L2 state they have verified to be true to a smart contract. During a 7 day period, other validators canchallengethese claims, and a dispute resolution process occurs. Once a claim is confirmed, that L2 state is considered correct on Ethereum. Thisvalidationprocess is why assets can be bridged between Arbitrum chains and Ethereum L1 with a 7 day delay. Achallenge protocolinvolves parties submitting fraud proofs to Ethereum to determine the correct result of L2 execution.

However, validation on Arbitrum One and Nova via fraud proofs today ispermissionedbecause their dispute protocols are vulnerable todenial-of-service attacks. A malicious validator can repeatedly spend funds to prevent assertions from being confirmed, therefore delaying withdrawals from L2 to L1 for as long as they’re willing. Ed Felten from our team has previously written about Delay Attacks on Rollup Protocols and their severityhere.

We have invented a new approach to validation that gives us afixed, upper bound 7 days of additional delay on confirmationswithout suffering from delay attacks. Our protocol, calledBOLDcan make validation of Arbitrum chains safely permissionless, moving them many steps up in the ladder of decentralization. The approach allows asingle, honest validatorto win disputes on Ethereum against any number of adversaries.

The code and research specification are now available on Githubhere. We are also contributing the code to the ArbitrumNitrocodebase for development and testing. Soon, we’ll be announcing both local devnets for the community to try and a public testnet for the protocol!

Introducing BOLD

Every layer 2 system has to cope with the problems of delays when settling their state to Ethereum. BOLD is an evolution of Arbitrum’s dispute system culminating in a much more robust approach. To our knowledge, BOLD is thefirst, practical challenge protocolthat supports efficient all-versus-all disputes. It:

(a) Guarantees fixed upper bounds on confirmation times for Optimistic Rollups’ settlement, …and

(b) Ensures a single honest party in the world can win against any number of malicious claims

Disputes in BOLD are tied to deterministic execution of an L2 state,not to a particular staker or entity. This means anyone who agrees with a state can defend it, until a single point of disagreement is found. Because the honest L2 state is deterministic,honest parties will always winif participating, as evil ones cannot fake proofs of execution.

For detailed information on how BOLD works and what makes it special, check out our research specification available on Githubhere.

Code Is Now Available

Today, we are making public our implementation of BOLD and publishing our research specification that explains the protocol’s internals undergithub.com/offchainlabs/bold. The codebase includes a complete implementation of a challenge manager that not only posts assertions about an L2’s state, but can participate in challenges against any number of malicious adversaries and confirm thecorrectstate.

Our implementation ismodular, and can be integrated in Arbitrum Orbit chains or Arbitrum One/Nova should the DAO decide to adopt it. When integrated into an L2 validator node, BOLD encapsulates all logic required to participate in challenges, post assertions about L2 states to Rollup contracts on Ethereum, and confirm such assertions.

BOLD has also beenauditedby Trail of Bits, with our audit report included in the repositoryhere. The codebase also follows the same licensing as Arbitrum Nitro at this time, as we plan to integrate the code as a dependency Arbitrum technology chains can easily use — batteries included.

We believe additional tooling is crucial to understand a complex system such as this. As a result, we are also building a Challenge visualizer and API that is in the works! Sneak peek below, built byPreston Van Loon:

Roadmap

There are a few more steps to complete before BOLD is ready for production. Coming up next, we plan on:

1. Sharing instructions for running an Arbitrum Nitro devnet with BOLD challenges enabled in the coming weeks
2. Publishing our formal proofs code for BOLD, written in the Isabelle programming language along with our full, academic-style paper
3. A public testnet environment (a new one will be provisioned for BOLD) for the community to participate in challenge games
4. …and if there is positive community feedback, we plan to prepare an AIP so the DAO can decide whether to adopt this new challenge protocol in Arbitrum One and Nova

Try it Out Today!

The BOLD repositoryREADMEincludes instructions on running a full dispute example locally via an end-to-end test, allowing anyone to see how a dispute is resolved using a local Ethereum anvil backend:

lvl=info msg="Submitting one-step-proof to protocol" service=edge-tracker startCommit=0x2f0e761b endHeight=4 endCommit=0xfb7311a8 validatorName=bob challengeType=small\_step\_challenge\_edge id=0xbdb60918 startHeight=3  
lvl=info msg="Succeeded one-step-proof for edge and confirmed it as winner" service=edge-tracker id=0x4be715c1 startHeight=2 startCommit=0xbcb71b66 endHeight=3 endCommit=0x2f0e761b validatorName=bob challengeType=small\_step\_challenge\_edge  
lvl=info msg="Edge tracker received notice of a confirmation, exiting" service=edge-tracker endCommit=0xfb7311a8 validatorName=bob challengeType=small\_step\_challenge\_edge id=0xbdb60918 startHeight=3 startCommit=0x2f0e761b endHeight=4

URL: https://blog.arbitrum.io/usdc-to-come-natively-to-arbitrum-2/

# USDC to Come Natively to Arbitrum

Circleis launching USDC natively on Arbitrum on June 8, 2023! Keep reading to learn more about this launch and how to migrate liquidity from “bridged USDC” to native USDC.

### Native to Arbitrum

USDC issued by Circle will be native to Arbitrum. This will be the official version of USDC that is recognized within the Arbitrum ecosystem, and will ultimately replace the currently circulating bridged version of USDC that comes from Ethereum.

### Benefits of Native USDC

* Fully reserved and always redeemable 1:1 for US dollars
* Enables institutional on/off-ramps via Circle and other partners
* Upcoming support byCCTPto eliminate bridge withdrawal delays
* Upgradeable smart contract for future enhancements by Circle

### What You Need to Know

Ahead of the launch of native USDC on June 8th, Arbitrum will be renaming the Ethereum-bridged version of USDC on block explorers as “USDC.e”. There will also be outreach to ecosystem apps to make the same change in their app UI and documentation.

### Bridged USDC from Ethereum

* Token Name:Bridged USDC
* Token Symbol:USDC.e
* Token Address:0xff970a61a04b1ca14834a43f5de4533ebddb5cc8

### Native USDC issued by Circle

* Token Name:USD Coin
* Token Symbol:USDC
* Token Address:0xaf88d065e77c8cC2239327C5EDb3A432268e5831

### Liquidity Migration

Arbitrum will be working with ecosystem apps to provide a smooth transition of liquidity from bridged USDC to native USDC over time. There will be no immediate changes to the Arbitrum Bridge, and it will continue to operate normally for bridging USDC to and from Ethereum.

### Future Plans

Circle expects to bring Cross-Chain Transfer Protocol (#CCTP) to Arbitrum after the launch of native USDC. Upon integration into the Arbitrum Bridge, this will enable USDC to move natively to-and-from Ethereum (and other supported chains) in minutes — no more withdrawal delays.

### Stay Tuned for June 8th!

We’re very excited about what native USDC means for the Arbitrum ecosystem! Please reach out on theArbitrum DiscordandCircle Discordif you have any questions. Stay tuned!

URL: https://blog.arbitrum.io/arbitrum-nitro-one-small-step-for-l2-one-giant-leap-for-ethereum/

# Arbitrum Nitro: one small step for L2, one giant leap for Ethereum.

The time has come Arbinauts. Arbitrum One has now been fully migrated to the Nitro stack!

Ahhhhh!

Yes, it’s true, Arbitrum One is now running on Nitro — increased throughput, lower fees, next generation rollup architecture is happening, and it’s all live now on Arbitrum One mainnet.

This is a huge milestone that we’ve been working towards for a long time, and we are overjoyed to share our progress and excitement with the community. The Arbitrum One network is now fully back online, and over the next few hours ecosystem infrastructure will continue to come back online, which you can trackhere, and for all the latest updates make sure to follow our Twitter.

## Finally, Nitro is Here

We’ve talked at length about Nitro for a while now, but now that the migration has actually completed, devs and users will finally start to feel the effects of the upgrade. Just to recap, Nitro ushers in a slew of improvements, such as:

* Increased throughput,compared to pre-Nitro, 7x-10x higher (oh yeah 😎)
* Advanced calldata compression,which further drives down transaction costs on Arbitrum by reducing the amount of data posted to L1.
* Ethereum L1 gas compatibility,bringing pricing and accounting for EVM operations perfectly in line with Ethereum.
* Additional L1 interoperability,including tighter synchronization with L1 Block numbers, and full support for all Ethereum L1 pre compiles.
* Safer retryables,eliminating the failure mode where a retryable ticket fails to get created.
* Geth tracing,for even broader debugging support.
* And many, many more changes.

It really is a birthday celebration, and while this is a huge accomplishment, this is just the beginning of Arbitrum Autumn.

As an added bonus, we’ve also done a huge overhaul of ourdocs! A new gentle introduction to our tech, FAQs, and a generally beautiful UI are just a couple of major things you’ll notice while surfing our new documentation!

## Year 1 of Arbitrum One

Hold on, new stack, new docs, whose birthday is it?!?

Well for those that have been here long enough, you’ll probably remember that one year ago today, Arbitrum One mainnet went live to the public! It’s been a very memorable year, building alongside an amazing community, helping push innovation at the application level with some of crypto’s biggest projects choosing to call Arbitrum One their home, and proving that layer 2 Ethereum is the only way to a sustainable on-chain future.

Even with Nitro fully online on both Arbitrum One and Nova (remember, Nova has been running on Nitro this whole time!), the Arbitrum story is just beginning. Our team is hard at work to further increase scale, reduce cost, and make the Arbitrum user experience even better. We’ve got a lot in the hopper, and all of our future work is centered on continuing to push the envelopes of security, efficiency, and scalability with you — the community!

Additionally, while we’ve had our heads down working on changes over the last few months, we’ll be taking some time to go to Devcon! Several members of our team will be there and we’re excited to connect with the community and share some updates then.

A is for Arbitrum. A is for Autumn. 🍂

For technical background on Nitro, our whitepaper provides a deep dive into the technical design and rationale behind our next-generation rollup architecture. You can read the whitepaperhere.

We’re hiring! All of this innovation is only possible because of the incredible team we have at Offchain Labs. Our team works tirelessly every day to push the limits of blockchain scaling, and we’re still continuing to grow! If you want to join the best team in blockchain,visit our careers pageand apply!