

# CEX.IO Compass: Q12023

# Exploring Emerging Layers Within the Crypto Ecosystem





# Greetings fellow crypto enthusiasts,

The last time we spoke in January of this year, the crypto ecosystem was at a crossroads. After ricocheting through a 2022 series of market upheavals and technological advancements, we entered 2023 with cautious optimism. Using Bitcoin's network as a bellwether, diagnostics across market highs and lows, hash rate, and the difficulty of reward discovery all indicated the asset's strong health. We took this as evidence of the resilience and perseverance of the global crypto community, and a strong indicator of a potential industry rebound this year.

Although turbulence continued throughout the winter months, we have been afforded a reminder of what made cryptocurrency so promising in the initial aftermath of the 2008 global financial crisis. Despite crypto seeing increased regulatory scrutiny across multiple jurisdictions, real calamity struck in the traditional banking sector in Q1. Silicon Valley Bank, <u>Signature</u>, Credit Suisse, and other outlets across the U.S. and Europe were rocked by insolvency, closure, scandal, liquidation, and acquisition. Once again, the risks of the fiat system were on full display, as they were 15 years ago.

While the specters of recent implosions still haunt the digital asset space, we now share a more level playing field in this current lanIn the days that followed recent banking events, requisite finger pointing ensued with both thoughtful and ludacris application. In reality, the events of mid-March repositioned the crypto ecosystem as a viable alternative to centralized finance.dscape. However, much like the old adage about throwing stones, there's an irony close to the surface that could be diffused if TradFi and DeFi both <u>got their homes in order.</u> At the very least, we can all agree that bad actors, loose oversight, and skittish investors can combine to have adverse effects on any market.

The technological leaps and bounds of Q1 2023 also helped reinvigorate the crypto space after its 2022 rough patch. Efforts recalibrated around growth in Ethereum Layer 2 (L2) solutions, the new <u>ERC-4337</u> token standard, and of course, <u>Al</u>. These developments are united in their contribution to refining how the crypto space can and could operate. L2s help expand and streamline functionality on the Ethereum network, while introducing account abstraction for ETH holders enables gasless transactions and more intuitive security preferences. Alongside chatbots of increasing magnitude establishing new vectors for exploring and applying humanity's vast scores of information, we stand at the precipice of monumental change.



In our latest COMPASS report, The CEX.IO Market Research Team continues its detailed analysis of the crypto ecosystem by zeroing in on emerging innovations and parsing on-chain data. The rise of notable Ethereum L2 solutions Arbitrum, Polygon, and Optimism are leading the way in growth and activity on the eve of another major improvement for the base network. Ethereum's pending Shanghai upgrade will help rectify confusion around staking, a practice that's enjoyed rising attention in the months since <u>The Merge</u>. This clarity is providing a more organic glimpse into how Ethereum and ETH are positioned as they continue to absorb new capabilities.

Not to be outdone, the launch of ordinals on Bitcoin's network has opened new avenues for storing and sharing images, text, sound, and video. In the style of NFTs, these clever tools create unique impressions on individual satoshis to preserve a cache of data. By diversifying and refining the potential of these available resources, more real-world use cases will continue to be discovered.

Taken together, the expansion of crypto's two flagship ecosystems into generative new directions is reflected in the total value locked (TVL) on these networks. The rise of stablecoin usage among Ethereum participants, when paired with the network's accentuated efficiency, help reveal what balanced tokenomics can resemble in a mature, L2-enabled system. Much like the roll up technology at the heart of these advancements, we're once again feeling optimistic about what new opportunities the future may hold.

While we continue to navigate the uncertainties of the regulatory landscape, the organic evolution of forward-looking projects and the collaboration they foster is a testament to crypto's ingenuity. We hope you'll join us as we explore this next chapter in the ecosystem's ongoing refinement, and may the coming days bring a wealth of prosperity along your crypto journey.



## **Oleksandr Lutskevych** Founder and CEO, CEX.IO

This report is an "opinion piece." Digital assets can be volatile; do your own research and seek professional advice. The report uses on-chain, price, and other data produced by the assets and blockchain networks being observed, their trading activity, and other points around their use and operation. All data observed is taken from the third-party platforms designated throughout the report, and is intended to be used educationally for crypto curious, newcomer, and serious readers. See full disclaimer here.



## Exploring Emerging Layers Within the Crypto Ecosystem

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# Ethereum & DeFi - peeling back the layers

Last quarter, Ethereum took center stage in key narratives swirling through the crypto space. The leading smart contract platform, and the ecosystem underpinning it, saw robust growth in Q1 2023.

Among the primary catalysts for this expansion were Ethereum Layer 2 (L2) solutions. As the sun set on Q1, there were three Ethereum L2s in the <u>top 10 chains</u> by total value locked (TVL). Arbitrum, a L2 optimistic roll up, sat at the helm of L2s with more than \$2.5 billion in TVL. Trailing closely behind were Polygon and Optimism, which shared a combined TVL of \$2.4 billion. Furthermore, Arbitrum's airdrop provided additional tailwinds for L2 use. The highly anticipated drop attracted a record number of addresses and increased chain activity, as users flocked to claim the governance token.

Liquid staking was another contributor to the growth of the Ethereum ecosystem. In February, the TVL of liquid staking across DeFi surpassed that of lending, marking a major milestone for the space. Prior to this, lending was the second largest DeFi sector in terms of captured value. Losing its spot to liquid staking pronounced a significant shift in the layers of value that comprise the industry. Ethereum led the sector in this accomplishment, with 92% of all value locked in liquid staking. Despite the practice drawing increased pressure from regulators, anticipation around Ethereum's Shanghai upgrade, which will enable staking withdrawals, likely contributed to the network's dominance.

Let's dive into the granularities of these forces, and what they indicate for Ethereum and ETH as a whole.

### Ethereum L2s

In our <u>Q2 2022 Compass</u> report last June, we noted mounting evidence of sustained L2 growth. At the time, we highlighted how the rise of L2 activity against diminishing L1 traffic, and share of gas, were strong indicators of L2 expansion. The signals have only grown stronger since, as the leading Ethereum L2s are experiencing exponential growth.



## L1 vs. L2 activity

Last quarter, Ethereum L2 activity grew in both outright and relative terms. Since the start of 2023, Optimism and Arbitrum's daily activity has more than doubled. After beginning the year with roughly 530,000 daily transactions, the networks saw a combined total of 1.3 million transactions per day by the close of Q1. As of March 31, the two networks processed a joint average of 922,175 transactions per day, year-to-date (YTD). This represents a 547% increase in daily activity since our first reporting on the June 2022 YTD average.

Over the same period, Ethereum L1 transactions remained mostly flat. After experiencing around 1.09 million transactions per day through June 2022, that average dipped to 1.05 million in Q1 2023.



The share of Arbitrum and Optimism transactions also grew relative to that of Ethereum L1. This fact, coupled with a flat average daily transaction count on L1, indicates that the success of these L2s isn't solely a result of greater crypto adoption (or the idea that "a rising tide lifts all boats"). Rather, it highlights that these solutions are delivering on improving Ethereum's user experience and solving problems central to the network.

In fact, these two solutions amounted to more than 87% of Ethereum L1 daily transactions, on average through Q1. When we first observed the relative activity of Ethereum L2s in Q2 of last year, the share of these solutions topped out around 30%.



#### **Optimism + Arbitrum Percent Share of Ethereum Mainnet Activity**





#### Arbitrum airdrop

Airbitrum's airdrop was the highlight of Q1 2023 for Ethereum L2s. Speculation around the possibility of an Arbitrum token started in spring of last year when a competitor, Optimism, launched and airdropped its OP token to reward early adopters.

Arbitrum formally announced the launch of its ARB token on March 16; a week later it was airdropped to eligible users, who then flooded the network. In the wake of the airdrop, key usage metrics reached all-time highs, and crashed the website where rewards were claimed. This was the result of participation from more than 600,000 active addresses, which eclipsed the previous record by more than 440%.





Furthermore, the daily transaction count on the Arbitrum network reached an all-time high of 2.733 million on March 23 when the airdrop went live. This milestone presented more than 50% growth over that of the previous high. Since then, daily network activity has retreated, and ended Q1 fluctuating between 1.1 and 1.2 million transactions.





### Relative gas use

A strong signal of increased L2 use and demand can be found in data from Ethereum L1. While L2 transactions take place on separate networks, all activity is eventually finalized and recorded on the Ethereum base layer. This means a portion of Ethereum's gas limit must be expended on L2 activity, making it a viable gauge for tracking the growth of the network's secondary layers.

#### What is gas and how does it work?

For those who are new to Ethereum, the following outlines the role gas plays on the network, and the relationship between L1 and L2 consumption.

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Gas refers to the cost necessary to execute a transaction on the Ethereum network. Different types of transactions <u>cost</u> varying amounts of gas, depending on their complexity. For example, simple ETH transfers require less gas than providing liquidity or swapping assets on an Ethereum native DEX. Each block on the network has an upper bound on the amount of gas it can accept (gas limit) before it becomes invalid. Thus, not all transactions at any point in time will end up in a single block.

Since every action on the network requires gas, and there is a limit on the amount used in each block, validators confirming transactions choose those with the highest gas, and therefore reward, first. The rest get pushed to the next block, and so forth, or aren't selected at all. In short, gas acts as a user's bid for block space in the hope their transactions are chosen for execution. This dynamic results in expensive network fees, when an increased number of users are bidding on a limited amount of space per block.

As it relates to L2, transactional data is bundled up into parcels that are then communicated to, and stored in L1 blocks. The recording and storage of L2 data in L1 blocks requires gas, which we can analyze to get a sense of L2 use. The graphic below helps visualize this process:



#### So, how much gas are L2s using?

Feeding off the momentum of L2 use, the share of gas consumed by L2 contracts continued its strong upward trajectory. It reached a daily all time high of 13.13% on the day of Arbitrum's airdrop. L2s occupied only 1.44% of Ethereum's daily gas limit on average in June 2022. Compared to a daily average of 4.54% through the first quarter of 2023, we've observed a threefold increase over the period.



#### L2 Share of Ethereum Daily Gas Limit



This rise in Ethereum's L2 gas activity is significant for two reasons: 1) it highlights the importance of L2s in the development and growth of the Ethereum ecosystem, and, 2) it shows that competition for Ethereum blockspace is intensifying. The second point is especially revealing. Remember, Ethereum block space is finite. Therefore, L2 occupying more block space means competition with L1 activity is growing. This can have a significant impact on gas prices, sometimes viewed as the value of Ethereum block space, which rolls up to ETH through the network's burning mechanism.

Alternatively, this can be viewed as a balancing act. When there's more competition for block space, and therefore higher gas prices, this helps control ETH inflation by burning more coins. In turn, this has helped maintain favorable tokenomics and the overall good health of the network and its native asset.

## L2 value growth

The increased use of L2s led to strong growth in the value locked on these networks in Q1. The TVL on leading L2s grew from \$2.8 billion on January 1, to \$4.9 billion at the close of the quarter, for an increase of 68%. Optimism expanded by 79% (\$482 million), Arbitrum by 134% (\$1.4 billion), and Polygon saw 20% (\$218 million) growth.



#### Optimism, Arbitrum, and Polygon TVL



Arbitrum ended Q1 as the most valuable L2, with more than \$2.5 billion in captured value. So far, stablecoins have been a major catalyst for the growth of the ecosystem. This suggests the network's rising value is more organic, as growth is fueled by new value entering its ecosystem, and not just inflating values of tokens that exist on the chain. The chart below highlights this idea by visualizing the

network's daily USD stablecoin flows. Through the lion's share of Q1, aggressive flows of stablecoins moved onto the network.







At the conclusion of Q1, there was roughly \$1.93 billion worth of stablecoins across all denominations on Arbitrum. This figure ballooned by almost 33%, or \$481 million, in March, and 104%, or \$981 million, in the three month period ending March 31. USDC remained the most widely used on Arbitrum, consistently occupying two-thirds of the network's cumulative stablecoin balance through the quarter. In spite of headwinds faced by Circle, the issuer of USDC, from the recent banking fallout in the United States, the amount of USDC on the network grew with haste. In March alone, some 233 million USDC funneled into Arbitrum.



## Liquid staking

Among the more notable trends of Q1 was liquid staking overtaking lending by TVL. Decentralized lending has been the first or second largest sector within DeFi since the space gained strong footing in mid to late 2020. However, this is no longer the case. The value captured by liquid staking initially exceeded that of lending on February 26. It commanded the position as the second most valuable stratum of DeFi through March 31. The void in value capture approached \$1.9 billion at the end of Q1, with liquid staking holding \$16.25 billion in TVL and lending holding \$14.39 billion in TVL.



#### **Top DeFi Category Trends**



## Catalyst of growth

Ethereum's Shanghai upgrade is among the prominent potential forces that drove growth in liquid staking. Since Ethereum holds roughly 90% of all value locked in liquid staking, fluctuations in this practice on the network have outsized control over the growth, or contraction, of the sector. Increased clarity around the implementation of the network's Shanghai upgrade, which will allow users to withdraw staked ETH, likely encouraged more participants to pursue this method in Q1.

Until this point, staked ETH has been inaccessible, with timelines for its retrieval remaining largely opaque. However, now that users are confident this matter will be resolved, and soon, more are choosing to explore ETH liquid staking.

Through the first three months of the year, an additional 1.2 million ETH were liquid staked. This constituted almost 20% growth in the ETH liquid staking balance, which sat at 7.3 million ETH as of March 31. The chart below helps illustrate this trend.





#### Net impact on Ethereum and ETH

The culmination of all this positive momentum resulted in an improved economic landscape for the Ethereum network and ETH. Q1 marked the most profitable three month stretch for Ethereum since March 2022, as network revenue exceeded new supply creation by \$140 million.

As it relates to Ethereum, revenue is the sum of the share of transaction fees that are burned. Token incentive is the sum of block and staking rewards distributed to validators; and earnings is the difference between revenue and token incentive.

#### **Ethereum Network Monthly Earnings**





Revenue Token Ir

Token Incentive Earnings

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The sustained activity on the network, and the burning of coins, also pushed ETH supply growth into net deflationary territory. ETH was deflationary on an annualized basis for 91% of Q1 2023; and notched its longest stretch of negative annualized supply growth since the burning mechanism was implemented in August 2021.





# Bitcoin - a new era of utility

Bitcoin was an epicenter of change as we entered 2023. BTC and DeFi grew closer in Q1, as alternative use cases for BTC and the Bitcoin network entered into the conversation. Although still in its infancy, this period of experimentation could lay a foundation for greater explorations of network utility across legacy and emerging blockchains.

Behind the scenes, Bitcoin exhibited strong fundamentals that fired on all cylinders. As of March 31 the network had never been stronger, with signs aligned toward continued growth.



#### Ordinals

Ordinals took the spotlight as drivers of new utility on Bitcoin and demand for block space. Akin to NFTs, they allow data, like images and videos, to be attached to individual satoshis, or sats (the smallest unit of BTC), on Bitcoin's L1. This means that NFTs and related projects that gained fame on smart contract chains, such as Ethereum, Solana, and Aptos, can also exist or launch on Bitcoin. NFTs have grown to be one of the most popular components of the digitized world. Ethereum alone <u>averaged</u> tens of millions per day in NFT-dollar denominated volume through Q1.

The term "inscription" is often used interchangeably alongside ordinals, but there is a key distinction between the two. Ordinals are the systematic ordering of sats in a way that creates the "non-fungible" characteristics necessary to forge NFTs. By nature, sats are fungible; that is, one sat is indistinguishable from the next. However, <u>ordinal theory</u>, or the means of assigning individual identifiers to otherwise common sats, gives them a quality of uniqueness necessary to be non-fungible.

On the other hand, inscriptions are the physical content of an NFT itself (e.g. images, videos, and text). This concept can be viewed from the perspective that the content is "inscribed," or stamped, into a now uniquely identifiable satoshi (ordinal). In essence, ordinals are the platform on which inscriptions sit, and are individually the two components needed to create Bitcoin-native NFTs.

NFTs on Bitcoin have been accelerated by BRC-20 tokens (Bitcoin Request for Comment), which, along with ordinals themselves, are a bi-product of the Taproot soft fork from Fall 2021. Created by @domodata on March 8th, 2023, BRC-20s use Ordinal inscriptions of JSON data to deploy smart

#### Explosiveness of ordinals and how they have impacted Bitcoin

Ordinals have gained significant traction in their short tenure. More than 663,000 total inscriptions were forged in Q1, with 420,000, or 63%, of them created in March. Their adoption grew parabolically as infrastructure such as wallets, marketplaces, and services to create them began to emerge. Relatively speaking, ordinals are a young phenomenon. However, despite entering Q1 with little support, they've since managed to impact a growing ecosystem.



#### Daily and Cumulative Inscription Count



Their rapid adoption has seemingly made a material impact on the network. The seven day moving average of Bitcoin block size increased 72% through Q1, with fee revenue generated from inscription providing a boost to miner profitability. Inscriptions generated 1.7 BTC in fee revenue on a daily basis over the entirety of Q1, and captured 3 BTC on average in March. The chart below highlights the fee

revenue generated by inscriptions and how they might have influenced block space.



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There is also a strong correlation between the introduction of ordinals and Bitcoin's network fee composition. After growing aggressively in early February, Bitcoin's daily transaction fees climbed to multi-year highs.

At the conclusion of the quarter, the seven-day moving average of total daily transaction fees stood even with levels not seen since Spring/Summer 2021. The network closed Q1 with a seven-day moving average in fee revenue of 27.32 BTC, as fees generated from daily transactions climbed 55%. Inscription fees made up about 8% of all fee revenue for Q1, and comprised 10% of that generated in March.

Additionally, the percent share of daily miner revenue coming from transaction fees reached multi-year highs. Peaking in Q1 at nearly 5%, transaction fees haven't contributed this heavily to total revenue in nearly two years.



#### Mounting ties between Bitcoin and DeFi

Q1 also saw growing interoperability between Bitcoin and DeFi. From BTC use on alternative chains, to strong growth in Bitcoin native DeFi solutions, the foundation of a greater relationship between Bitcoin and utility is budding.



<u>Stacks</u> was an integral component in the development of Bitcoin-based utility. The open-source platform enables smart contracts, DeFi, NFTs, and dApps on the Bitcoin network. Similar to Lightning, which CEX.IO covered in its previous edition of <u>COMPASS</u>, Stacks is an additional layer built on top of Bitcoin.

The chain hosts a suite of dApps allowing users to swap assets, provide liquidity, and issue stablecoins. As of March 31, there were five applications on Stacks with a cumulative TVL of \$48 million. Together, these applications added \$34.28 million in value over the course of Q1, representing 258% growth. While Stacks is still finding its voice in the large choir of DeFi platforms, it poses unique opportunities for Bitcoin and blockchain utility alike.



At the same time, BTC made its way into rapidly growing alternative ecosystems, like Arbitrum. Lyra, a popular options protocol on Arbitrum, launched BTC v<u>aults</u> in Q1. Additionally, Radiant, an omnichain money market based on Arbitrum, includes WBTC in its rewards basket. Despite launching on Arbitrum in late January, Lyra has more TVL locked on the L2 than any other chain. TVL accelerated strongly in the days that followed the introduction of WBTC vaults on February 26, as indicated by the chart below.





Stacks and ordinals carried Bitcoin's excitement throughout the quarter. While both are poised to play a role in the future of Bitcoin's intersection with DeFi, there are other novel developments in the pipeline. Among them is <u>Babylon Chain</u>. Babylon is infrastructure linking Cosmos SDK chains to the Bitcoin network, and allows them to benefit from the security offered by proof-of-work (PoW). Moreover, the solution brings functionality benefits to Cosmos chains, such as faster staking unbonding.

However, these benefits don't just favor Cosmos chains and their ecosystems. Linking Bitcoin to other networks helps create demand for Bitcoin block space, which can prove advantageous for miner profitability and overall network use. Babylon is currently in its beta phase with the expectation of launching on the mainnet later this year.

#### State of the network and BTC update

Bitcoin and BTC's eventful quarter on the outside are further enforced by on-chain health diagnostics.

The network's hash rate, or the horsepower that fuels its functionality and security, reached new highs in Q1. After opening the year with a 30-day simple moving average of 247 Exahashes/s, the network added 85 Exahashes representing 35% growth in the first three months of the year. In turn, difficulty adjusted upward around 33% to new highs. As of the last day of the quarter, it had never been harder for miners to discover new BTC.

The meaning behind the network's growing hash rate extends beyond security and computing power in the current environment. It also indicates unwavering conviction in the future of the network and BTC as new machines come online.





Moreover, the number of average daily transactions climbed to multi-year highs. The 30-day simple moving average of Bitcoin's transaction count inflated 24% to 313,000 transactions per day. The last time the network averaged this level of use was in March 2021 when BTC was trading between \$55,000 and \$60,000.

#### **Bitcoin Daily Transaction Count**





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The points above helped carry BTC to a 72% gain in Q1, and put the flagship asset among the year's top performers, after suffering a tough 2022.



An interesting point to note relative to BTC's price action through Q1, is its correlation with other assets and traditional indexes. Its relationship to the S&P 500 and other indexes was a major topic through the second half of last year.

As it stood on March 31, BTC experienced a tightening correlation with gold, and a decoupling from the S&P 500. This is a signal that BTC's price behavior and public perception might have shifted towards the end of Q1. Namely, that new and established participants saw more similarities with the traditional safe haven asset over those of U.S. equities. Considering the environment of Q1, where banks required outside intervention in the wake of crises, and certain economic indicators began to slow down, this shift is potentially significant. Add in the fact that the Federal Reserve has remained persistent on its chosen course for monetary policy, and it becomes more clear that the market may have started viewing BTC in a different light.





# **Closing the curtain**

The trends formed over Q1 show that crypto is unnerved in the face of difficulty. With the space's reduction in bloat and consolidation over the last six months, new, influential projects are helping to realize a more resilient ecosystem. This is evident by the growth seen in the industry through the end of March, despite regulatory crackdowns and attempts to expel crypto from the traditional financial sector.

Looking ahead, there is much cause for excitement. The largest ecosystems are on the brink of significant transformation that will likely shape the next iteration of crypto. Although there is still uncertainty in both the digital and traditional economies, history shows that the durability of the space will allow it to emerge stronger and more robust than ever before.



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