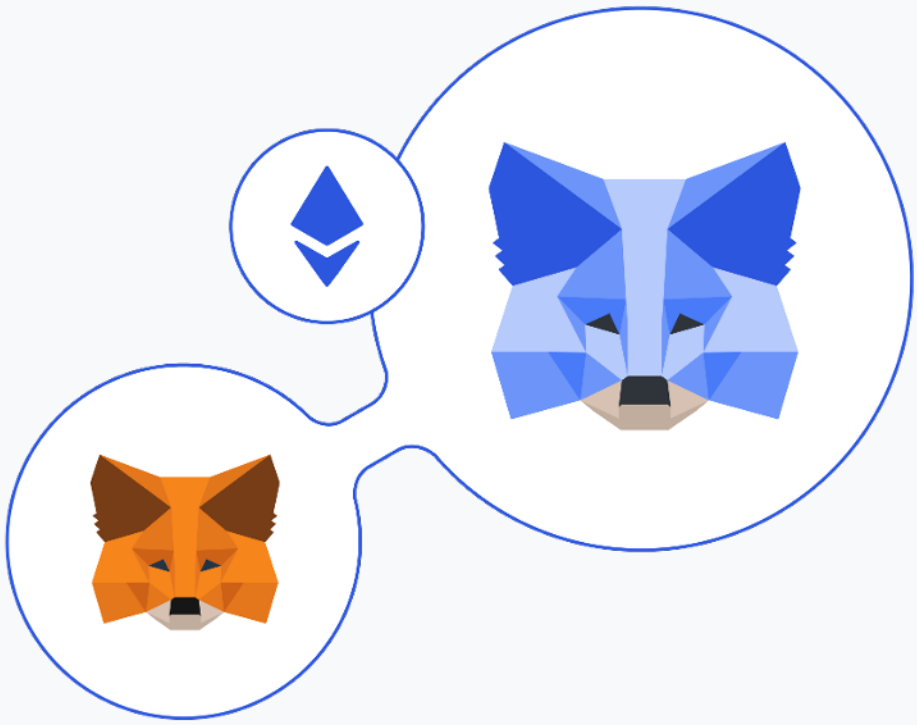
METAMASK | Institutional

INSIGHT REPORT

DeFi and Web3 for Organizations

A guide to decentralized finance (DeFi) and Web3 for crypto funds, market makers, trading desks, and other organizations



by ConsenSys

Outline

Introduction

Decentralized finance—DeFi—refers to the shift from traditional, centralized financial systems to peer-to-peer finance enabled by the Ethereum blockchain.

In the past eighteen months, we've seen significant traction from decentralized versions of lending and borrowing platforms, prediction markets, margin trading, payments products, insurance, and more. Notable traction has also been evident across entirely new forms of investment, such as staking and yield farming. The DeFi ecosystem has attracted more than 4M users as well as some of the world's leading financial institutions, funds, exchanges, and family offices.

Since late 2020, we have seen a Cambrian explosion of innovation in the DeFi ecosystem. The entire financial system is being rebuilt from first principles with more security, transparency and interoperability—in weeks and months rather than years and decades. **With radical financial innovation and growth comes radical investment returns and opportunity**, leading to more and more institutional capital flooding into this space.

The user needs of institutional finance can be mapped using the capital allocation cycle—from research, pre-trade compliance, and best execution, to monitoring, reporting and custody. Over the last 18 months, there has been an explosion in products and services in all these categories, with capital flooding in to build the necessary DeFi infrastructure. Crypto custodians, for example, have raised large rounds, taken on strategic investments, or been acquired. Compliance, trading and data analytics are attracting capital to build and scale institutional crypto access.

However, **it's not only the tooling and infrastructure around DeFi that is being built. DeFi itself is also innovating to provide access to institutional finance—**from permissioned lending pools that ensure only KYC'd participants, to on-chain asset management, MEV resistant best execution protocols, and decentralized identity—more and more institutional focused projects are coming to market, and more will no doubt accelerate with Layer-2 scaling.

The institutional DeFi world is at an incredibly exciting moment in its adoption cycle. Larger regulated crypto funds, hedge funds, and traditional fund managers will lead the early majority. And the infrastructure is currently being built for the heavily regulated late majority. **With the unparalleled innovation in DeFi also focusing on the institutional world, it is certainly only a matter of time before Institutional DeFi becomes Institutional Finance**.

This report will discuss the surge in institutional adoption of blockchain and digital assets, the numerous opportunities emerging in the DeFi space, and how institutions can get started accessing, investing, and participating in DeFi and Web3. This report will not include introductory DeFi explainers, beginner's advice for retail participants, or recent ecosystem trends and analysis. For this information, please visit our DeFi knowledge base.

DeFi is the Future of Finance

The increasing popularity of DeFi has been widely touted as the death knell for traditional finance, or TradFi. While we're not quite there yet, there is a good reason why DeFi has captured the popular imagination: the total value locked in the expansive network of DeFi integrated protocols and financial instruments is now worth more than $200B.

Let's look at how DeFi makes cheaper financing possible.

Financial incumbents in the TradFi space have a high cost of servicing clients, right from onboarding, and trade execution, to post-trade activities such as clearing and settlement. TradFi institutions spend about $20B in trade processing annually, according to an estimate by The Bank of England. TradFi can save up to 80% of post-trade settlement expenses by leveraging distributed-ledger technology (DLT).

The high cost of servicing clients and legacy infrastructure means that TradFi has limited financial innovation ability. Many banks and central securities depositories are piloting tokenization projects that look to improve existing asset classes. These projects, while showing evidence of technical feasibility, fail to go live.

The business case for these projects is a tough one to make when accounting for the cost of migrating to a new system. To add to this, there is the challenge of adjusting existing processes, and stakeholder and user behavior, in line with any new technology. We saw similar behavior when sales and trading desks moved from voice to digital.

New business divisions with differently skilled personnel grew the digital business, while the personnel and systems dedicated to voice declined.

DeFi is well placed to disrupt TradFi with new, and innovative financing options as it does not use any of the TradFi structures to build its alternative financing structures. The lack of existing market infrastructure solutions within DeFi provide a fertile ground to rethink the user experience in the capital markets lifecycle. This helps create new financial primitives, alternate financing structures and yield generating opportunities. DeFi now consists of over 17,000 protocols such as Aave, Compound and Uniswap for lending, borrowing, staking, hedging, swapping, yield farming and much more.

DeFi has also dramatically shrunk the cost of manufacturing and distributing various assets, similar to what the internet did for publishing and advertising. One reason for these lower costs is DeFi's peer-to-peer lending mechanism that strips out third-party intermediaries. This means that an institution looking to access credit can do so without having to pay a fee to a bank or another financial institution to grant that access.

Need a recap of the basics of the DeFi ecosystem? Watch our "Introduction to DeFi" Webinar.

WATCH NOW

The Surge in Institutional Interest

DeFi and Web3 were at the forefront of institutional interest in 2021.

Institutional investors, who may have been skeptical about the investment opportunities of DeFi earlier, came to recognize the growth of Web3 and its related financial instruments powered by DeFi to be inevitable. They may not have fully understood the drivers behind DeFi or Web3, but have learned that the asset class cannot be ignored.

As a result, institutions dominated DeFi transactions in the second quarter of 2021, according to data from Chainalysis, a blockchain data platform. Large institutional transactions, which are transactions above $10M, accounted for over 60% of all DeFi transactions over this period.

Part of the attraction of DeFi for organizations are the high yields offered across the sector, when compared against returns from TradFi instruments. These higher yields become even more lucrative as increasing inflation cuts into gains from TradFi instruments.

Whether it was the Office of the Comptroller of the Currency allowing US banks to settle payments using stablecoins, or payments processor Visa settling the first crypto transaction, 2021 was a year of many firsts in institutional DeFi.

Investment Firms

Investment banks and asset managers have had a push-and-pull relationship with DeFi. While the high yields offer an attractive opportunity for these banks, the regulatory and technology uncertainty involved kept them away from the ecosystem. 2021 changed that. Many investment banks–including Blackrock, BNYMellon, and Goldman Sachs–either revived their crypto desks, or entered the space.

The year began with the news that Blackrock had filed with the SEC to add bitcoin exposure to two of its investment funds. The world's largest asset manager also invested $384M in bitcoin mining companies last year, its regulatory filings showed. In a push towards greater acceptance of crypto as an investment, BNY Mellon, the oldest bank in the US, formed a new digital assets unit, to provide services around bitcoin and other digital currencies.

Both Morgan Stanley and Goldman Sachs decided to offer their wealth management clients access to bitcoin exposure. Meanwhile, the European Investment Bank, the investment arm of the European Union, issued its first ever digital bond, worth 100M euros, on public blockchain. Societe Generale, France's third-largest bank, also proposed to borrow $20M in Dai from MakerDAO, one of the largest DeFI protocols.

Retail Banks

From calling digital currencies a "fraud", to offering custodial services for their digital assets to clients, retail banks have come full circle in their relationship with digital currencies. In 2021, many retail banks either started offering bitcoin exposure, or considering such exposure for clients.

JPMorgan Chase said in January that it may offer some clients the opportunity to invest in bitcoin funds. Similarly, Citibank launched a digital assets unit offering crypto investment services amid increasing interest from its clients.

JPMorgan did not just stop at bitcoin funds. Later in the year, it partnered with Wells Fargo and NYDIG to offer bitcoin exposure to their respective clients. In addition, JPMorgan launched an in-house bitcoin fund for its private banking clients.

Bank of America also launched a research unit to look into digital assets, while US Bank launched cryptocurrency custody services.

DeFi Projects

In 2021, the walls between the DeFi and the TradFi worlds became increasingly porous. While institutions tested crypto waters, DeFi companies welcomed both venture capital, and human resources from the TradFi world.

Crypto exchange FTX brought in Brett Harrison as its first president. Harrison joined FTX from Citadel Securities, a leading global market maker. The company also hit $25B in valuation, when it raised $900M in July 2021.

In another vote of trust for DeFi, crypto custodian Anchorage's proposal to become a digital bank was approved by the US finance regulator in January 2021. Anchorage ended the year at a $3B valuation after it raised $350M in December 2021.

2021 was also a blockbuster year for ConsenSys. We ended the year with a $3.2B valuation. Our crypto wallet, MetaMask, continued on its growth trajectory, reaching over 21M users as of November 2021, and MetaMask Institutional partnered with three leading custodians: BitGo, Qredo, and Cactus Custody to support institutional firms engaging with on-chain protocols.

In another first for DeFi, Swiss digital bank Sygnum said it would allow its customers to stake their ETH through its institutional banking platform. Crypto trading platform Bullish and Circle announced plans to go public via SPACs, while USDC-backer Circle also planned to become a full-reserve digital bank.

The Time for DeFi has Come

In 2021, many leading institutions shifted away from skepticism and took meaningful steps into the DeFi and Web3 ecosystem with business model pivots and capital deployment.

A whopping 90% of crypto's largest deals happened in 2021, according to a Messari report. And this 90% did not even include Coinbase's direct listing, which valued the crypto exchange at nearly $86B.

These strides are strong indicators of the upwards journey of institutional interest in 2022. According to an Intertrust survey, hedge funds plan to hold an average of 7% of their holdings in cryptocurrencies by 2026. The long-term growth opportunity for DeFi can be gauged from the fact that the market cap of all DeFi protocols ($149B at the end of December 2021) is less than 1% of that of global banks—highlighting enormous room for growth.

For a comprehensive list of Institutional DeFi milestones in 2021, see the appendix.

Institutional Opportunities

Here are a few of the most promising opportunities for institutional investments in DeFi and Web3.

Digital Asset Trading

Decentralized exchanges (DEXs), automated market makers, and token swapping aggregators are the types of cryptocurrency exchanges that operate without a central authority, allowing users to transact peer-to-peer and maintain control of their funds. DEXs, like Uniswap, Sushiswap, 0x, ParaSwap, and many others are solving the issue of being able to access crypto assets from anywhere in the world as long as you have an internet connection and a wallet like MetaMask. MetaMask itself has also developed a Swaps feature that aggregates liquidity data from across the DeFi ecosystem. It enables DeFi users to identify the best price quote, coupled with optimal gas prices for the given quote, the lowest failure rates, and largest market depth. These DEXs and aggregators are increasingly giving centralized exchanges a run for their money.

Coinbase, the popular cryptocurrency exchange that went public in Q2 2021, identified decentralized exchanges as one of the key threats to their business in their S-1. It's no wonder: in 2021, DEXs reported $1 trillion in trading volumes, an over nine-fold increase from a year earlier.

Lending Protocols

Compound and Aave are non-custodial, decentralized peer-to-peer lending platforms. Both platforms offer users opportunities to (1) borrow funds while putting up their crypto assets as collateral, and to (2) lend their cryptocurrency for interest rates that are exponentially higher than those offered in traditional finance.

Aave is known for popularizing flash loans, which are instant loans that users can borrow without collateral as long as the loan is repaid in full before the block is completed.

Providing liquidity on Aave currently yields up to 10.97% APY. As protocols chase liquidity, attractive yields are increasingly the norm.

In January, Aave launched Aave Arc, which uses KYC'd pools to provide institutional investors with direct access to decentralized lending markets. These pools will be separate from existing liquidity pools on Aave in order to comply with institutional compliance and regulatory requirements.

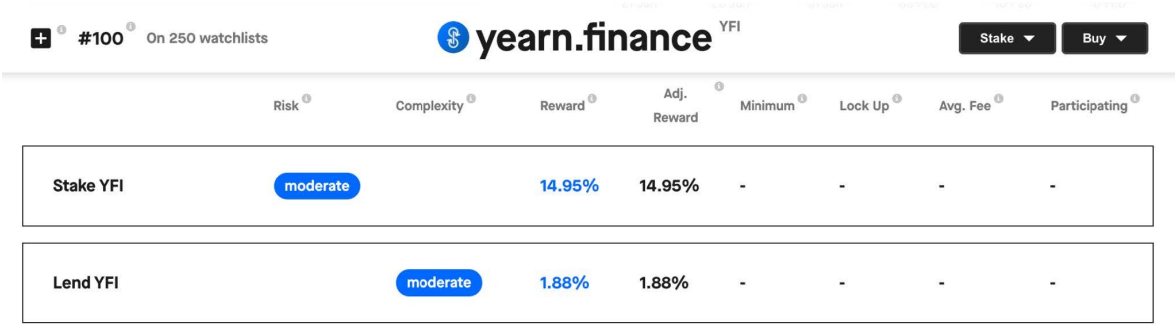
Another institution-focused decentralized liquidity network, Alkemi, reached over $16m liquidity last May. Similar to Aave, Alkemi offers KYC'd lending pools for institutional investors.

Yield Farming

Unique to DeFi, yield farming allows users to stake their crypto assets in various non-custodial, DeFi protocols to earn high fixed or variable interest rates. Yearn, Idle Finance, Enzyme, and Vesper are some of the top yield farming protocols.

In the absence of yield farming platforms, users must manually search for protocols with the highest returns, and move their crypto assets onto that platform to earn higher rewards. Think of it like crop rotation, with the seeds representing idle crypto assets and the fields as the protocols offering the highest returns. Yearn Finance automates this process by finding, and switching to, the highest yielding opportunities for yield farmers and liquidity providers. The price of YFI, the Yearn token, reached a high of $82,745.19 in May 2021, and fluctuated between $42,919 and $19,594.81 the rest of the year. With a market cap of $8.7B, Yearn Finance is highly valued by DeFi users who want to put their idle crypto assets to work.

Here is a snapshot of the high returns users can expect by staking or lending their YFI tokens:



Idle Finance is a decentralized rebalancing protocol that allows users to automatically and algorithmically manage their digital asset allocation among different third-party DeFi protocols. Investors can choose to maximize their interest rate returns through their MaxYield strategy or minimize risk exposure through their RiskAdjusted allocation strategy.

Enzyme Finance, formerly Melon Protocol, facilitates on-chain management of pooled funds and allows users to create their own tokenized, financial instruments.

Touted as the “401K of Crypto”, Vesper offers a service where users can “store and forget” their assets with the promise that they will generate the highest possible returns.

Collateralized NFTs

NFTs are enabling a new era of collectability and ownership, and enable new experiences for enterprises to engage with fans, patrons, and communities. Whether it is profile picture collections, artistic 1 of 1s, music clips, collectibles, or simply utility badges, Web3 wouldn't be where it is today without NFT mainstream adoption.

The proof is in the pudding, with sales totaling $21.7B in the three months up to February 14, 2022 — across 30.28M sales.

The platform largely facilitating this revolution is OpenSea, an NFT marketplace where users can buy and sell pieces from almost any NFT collection out there. And the transactions going through OpenSea speak volumes: for the first half of January 2022, OpenSea recorded $2.7B in trading volume. This puts it on track to surpass its highest-ever monthly trading volume of $3.4B in August last year.

Because NFTs are inherently composable with other Ethereum smart contracts and protocols, they are suitable for financialization. While there are three main ways– collective bidding, fractionalization, collateralized loans—that NFTs can be financialized, the one relevant to institutions is collateralized loans.

Platforms like NFTfi offer NFT collateralized loans, where a user can put up any ERC-721 token up for collateralization, and other users can begin offering you a loan. Once accepted, the ETH gets paid to the user and the NFT is locked in the NFTfi smart contract, only to be returned once the loan is paid. If a user can't pay back the loan then the NFT is then transferred to the lender. NFTfi's total loan volume has already surpassed over 12.3M DAI.

Another platform that is generating institutional interest in using NFTs as collateral is Arcade. The company raised $15M in series A funding in December 2021, and recently launched its own NFT-lending platform.

While the NFT-lending space is still nascent, there is already ample competition. Some other NFT-lending players include Trustology, and PawnFi, which raised $3M in November 2021.

Accessing DeFi and Web3

Before engaging in any of these activities, organizations must consider heightened risk and operational requirements—from custody, compliance, and best execution, to monitoring, reporting and research. We dive into these considerations in the following section, and then walk through the solutions offered by MetaMask Institutional.

Checklist: Getting Started with DeFi and Web3

Four steps to prepare your institution to access and engage in DeFi and Web3

- [ ] Consider strategically how much capital your fund is willing to allocate to DeFi exploration.
- [ ] Start learning through experimentation by using MetaMask. Make trades without investing too much into infrastructure and processes until your fund consolidates a DeFi investment strategy. Here are some ideas:
  - [ ] Swap DeFi tokens on MetaMask
  - [ ] Lend digital assets on Compound or Aave
  - [ ] Yield farm on Yearn, Enzyme, or Vesper
  - [ ] Trade NFTs on OpenSea. Use them for collateralized loans on NFTfi.
- [ ] Select a custodian or custody tech provider that meets the requirements of your organization

  * We dive into different crypto custody solutions for different organizations in the next section.

- [ ] Set up infrastructure and processes to manage digital assets
  - [ ] Research and analysis
  - [ ] Key storage
  - [ ] Digital asset custody
  - [ ] Compliance
  - [ ] User permissions
  - [ ] Trade execution
  - [ ] Reporting
  - [ ] Monitoring

*MetaMask Institutional helps facilitate many of these services. *Learn more about MetaMask Institutional in the section below "Engaging in DeFi and Web3"*

The Challenges of Institutional Engagement

In this section, we map out the adoption cycle of the institutional world noting the role and impact of compliance and regulation. We use a mental model of the transaction flow process to identify institutional needs and challenges—from custody, compliance, and best execution, to monitoring, reporting and research. This transaction flow process can be seen as a pyramid, a Maslow's hierarchy of institutional needs, if you will.

Different institutions of different sizes face different challenges. Yet, there is one aspect that unites the entire institutional world regardless of regulatory oversight or assets under management (AUM): **Risk**. Risk management within DeFi takes on several dimensions. At the base of our institutional needs pyramid is security. This entails the safe storage of private keys, which are most often held on Hardware Security Modules (HSMs) or Multi-Party Computation (MPCs) custody tech, or with qualified custodians.

That's not all. Institutions need to ensure that their keys are protected from hacks and theft. To this end, they must rely on custody, key recovery, and multi-signature capabilities, so that assets cannot be sent anywhere within the network without multiple parties approving and signing the transaction.

Within the base layer, additional security includes whitelisting wallet addresses and smart contracts, and placing limits on the number or size of transactions. Effectively, building in risk management rules depends on the complexity of an organization. It often involves insurance against loss of access (the loss of private keys) and loss against theft.

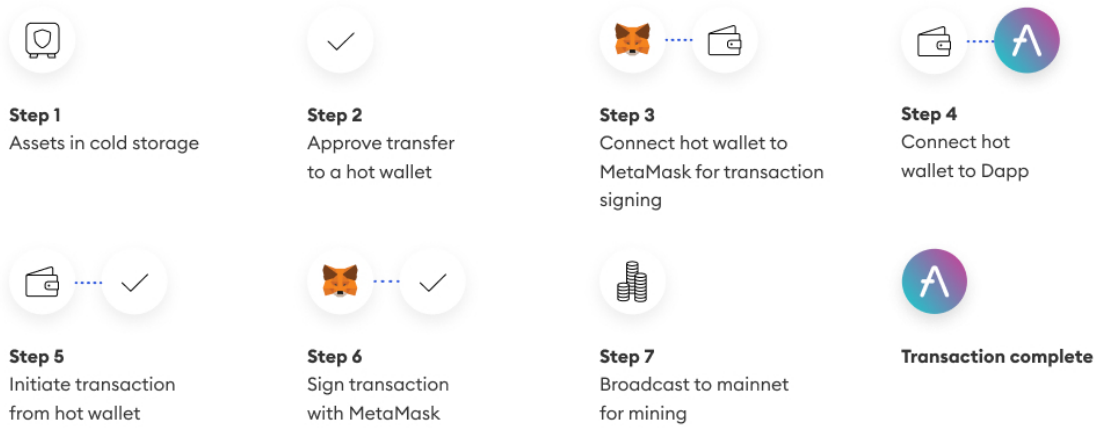
The next layer in the pyramid is **compliance**—a risk and challenge not yet faced by the entire institutional world, even though increased regulatory oversight will no doubt become paramount in the months and years ahead. Within Europe, Asia, and the US, institutions have to comply with Anti-Money Laundering (AML) regulations that often carry with them the threat of fines, fund closures, and incarceration when trading with nefarious counterparties.

Today, many tools exist in the market to track 'Know Your Transaction' (KYT) risks, identifying the flow of funds risk. Yet, the depth and breadth required to step into DeFi pools require analysis of all transfers within a transaction, and not just the transactions themselves. This means it's important that any tools evaluated in the market need to provide risk management within DeFi itself.

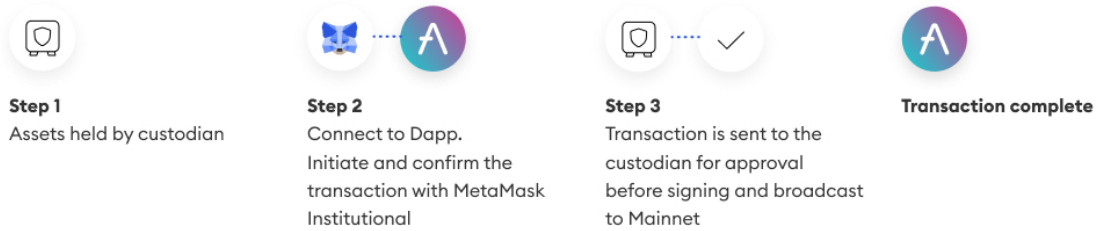
The next layer in the pyramid includes **best execution**: Ensuring that assets can be acquired and disposed of with ample liquidity, and that margins, spreads, and slippage remain tight and low. DeFi access can be achieved through two main execution venues.

The first is indirect via the limited number of centralized crypto exchanges, offering access to (often, a limited number of) tokens from some well known DeFi Primitive. Yet, to access DeFi directly, which means access to the tens of thousands of DeFi tokens and DeFi protocols that exist today, institutions will require the second, direct venue: a Web3 wallet.

Typical DeFi Investment Process



DeFi Investments with MetaMask Institutional



This brings us to the next challenge, and layer in the pyramid, **monitoring**: Often institutions execute their trades from the walled garden of their custodian accounts, trading on centralized exchanges to move assets. Three years ago all trading by crypto funds occured through centralized exchanges!

Yet, with the rise of DeFi, direct access has increased, often offering a more efficient route into the asset class—but this brings challenges. As institutions leave their walled custodian gardens, they need to ensure that they are able to track their assets, yields, attribution of Annual Percentage Yields (APY), and risk management around their positions.

Reporting makes up the fourth layer in the pyramid, which includes a variety of new challenges for the institutional world: A new financial world gives rise to new conventions—from airdrops to governance tokens. For example, yield farming actively across DeFi entails building complex trading strategies that include staking reward tokens across multiple primitives. These positions generate capital gains, additional governance tokens, and APYs.

Price and total return performance require accurate reporting by fund administrators to fund investors. Given how new and vastly expanding this ecosystem is, fund administrators are still coming to terms with the jargon, conventions, technical details and reporting. Institutional investors need reporting tools that provide detailed transaction data for their fund administrators and investors.

Lastly, there is **research**: how to better understand and filter the growing nuances and most important opportunities within the DeFi ecosystem.

In order for institutions to safely and effectively engage with DeFi, it is crucial that each of the six challenges above are addressed, and investment processes are made secure, compliant, and efficient. This is the value offered by MetaMask Institutional.

Crypto Custody Solutions

Custody in the institutional crypto world plays a fundamental role in accessing crypto, DeFi, and Web3. Custodians store private keys, approve, and sign transactions. They interact directly with broker/dealers and exchanges to facilitate transactions for fund managers. They are paramount to safely acquiring and holding crypto assets.

In exploring this technology, it is important to note that different funds, trading desks, and other organizations have different operational and regulatory needs, and therefore require different custodian models.

Crypto Custody: Custody Technology and the Qualified Custodian

First, we segment the idea of crypto custody into two categories:

- The qualified custodian owns the fiduciary responsibilities that go with custodying private keys. The SEC defines a qualified custodian as "*an adviser who has custody of client assets, and therefore must comply with the rule, when it holds, directly or indirectly, client funds or securities or [has] any authority to obtain possession of them.*
- Custody technology involves where private keys are stored. It is a technology offering for organizations (often qualified custodians) that allows for the key management of digital assets.

Key Storage: Hot and Cold Wallets

Within these two crypto custody categories, further segmentation can be made regarding how keys are stored:

- Hot wallets are deemed "hot" because they store private keys online.
- Cold wallets are not connected to the internet (cold). They store keys inside an offline physical device. These devices are often hardware security modules (HSMs). An HSM is a specialized device specifically designed to generate and hold private keys securely. They are able to approve and sign transactions.

Multi-Signature Approvals

Cold wallets have additional strict security layers and always require multiple approvals to move assets. Qualified custodians often offer a range of cold, warm, and hot wallets. With hot wallets, it is common to have multisig as the signing process. This means multiple individual private keys (N) are generated for every wallet. In order to enable transactions, more than one signature (M of N) is required. The purpose of this is to block a single person from being able to compromise the assets in a wallet.

Founded in 2013, MetaMask Institutional (MMI) Partner, BitGo, pioneered the multi-signature wallet and was the first digital asset company to focus exclusively on serving institutional clients. BitGo is a global leader in custody and security solutions with over $50B in assets under custody. It secures approximately 20% of all on-chain Bitcoin transactions by value and supports more than 400 digital assets within its platform. It provides the security and operational backbone for more than 500 institutional clients in 50 countries, including many regulated entities and the world's top cryptocurrency exchanges and platforms.

"As the DeFi ecosystem matures, many of our institutional clients are interested in actively participating. MetaMask is the gold standard of DeFi wallets and the integration of MetaMask Institutional with BitGo wallets allows for key management and custom policies to remain in BitGo, while MMI acts as an interface between our wallet platform and all dapps. We at BitGo support the vision to provide world class institutional-grade DeFi solutions to large financial institutions around the world.
—Mike Belshe, CEO, BitGo

Multi-Party Computation (MPC)

Hot wallets can store keys in different ways. For organizations, we focus on MPC algorithms.

Multi-Party Computation is an advanced cryptographic technique that removes the operational risk around private keys. It allows for multiple parties to hold parts of a key. Importantly, no single party knows which section of the key the others hold. The private key is effectively broken up into encrypted shares, where any predetermined number (M) of the total number of shares (N) are required to make a transaction (M of N). MPC has proved popular with organizations as it allows for multiple parties to quickly sign transactions (e.g. for active yield farming).

MMI Partner, Qredo offers decentralized crypto custody secured by MPC. Qredo supports institutions—from small-cap crypto funds to global asset managers—to manage their crypto assets and securely deploy assets into DeFi. Its Layer 2 blockchain also enables seamless settlements, and low-cost access to a growing ecosystem of cross-chain trading and liquidity opportunities.

"Qredo offers an alternative to the retail wallet solutions, vulnerable centralized databases, and cold storage devices that are unfit for institutions. Our decentralized custody model allows institutions to self-custody and scout out lucrative yield opportunities in DeFi, while still implementing scalable organizational governance, and meeting compliance and reporting needs."
—Anthony Foy, CEO, Qredo

Different Organizations, Different Requirements

It is clear that the needs of organizations vary dramatically depending on where in the market an organization sits. Small crypto funds that prefer active yield farming across the long-tail of DeFi tokens, are very different from multi-billion dollar hedge funds that prefer and need to work with qualified custodians. Larger organizations often need different technology stacks for different funds, different parts of the same book, or different geographies.

MMI Partner Cactus Custody™, for example, is a trust company based in Hong Kong with over USD10 billion in assets under custody. It is the third-party institutional custody service provided by Matrixport, Asia's fastest growing digital assets financial services platform. Cactus Custody™ offers cold and warm storage, enterprise crypto management features, and DeFi connectivity for miners, corporates, funds and projects.

"Institutional investors have started to recognise the tremendous opportunities that DeFi offers. The partnership with MMI helps us focus on providing unrivaled institutional access to these opportunities.
—Cynthia Wu, Head of Sales and Business Development, Matrixport

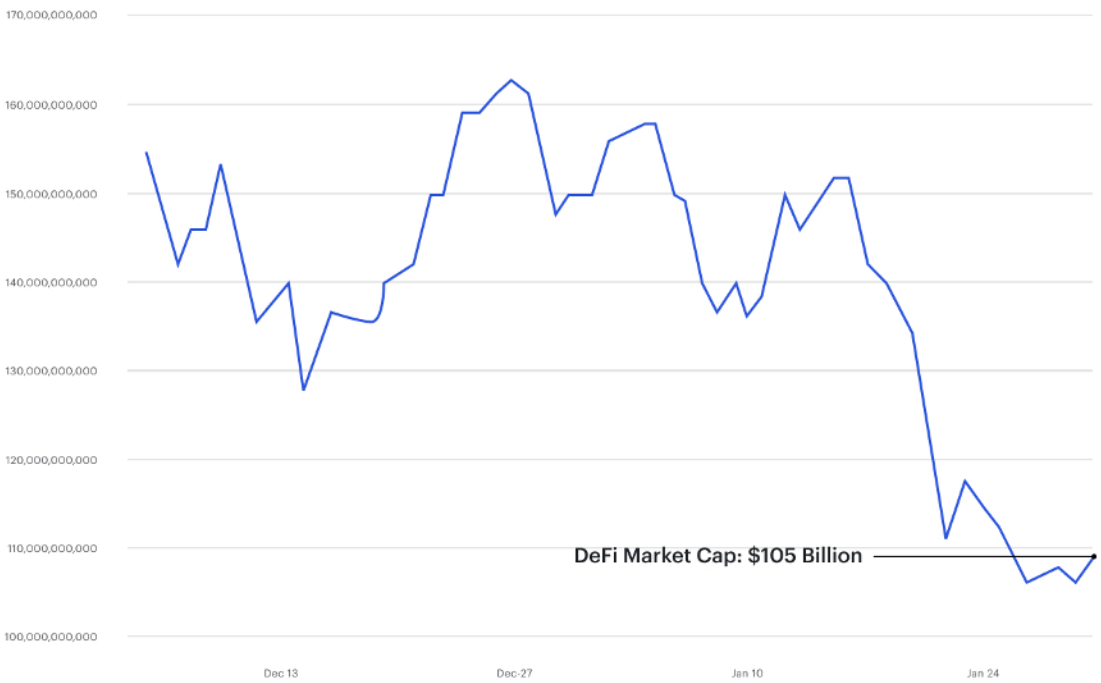
It is important to recognize that access to different types of assets, and different requirements for risk management, operational infrastructure, and processes—all drive different needs for different players across organizations. This means MPC, HSMs, and Qualified Custodians all have incredibly valuable roles to play to help facilitate participation of organizations in DeFi.

MetaMask Institutional practices custodian agnosticism. In order to truly serve this market, it is important to us to work with custodial wallet providers that meet all variations of institutional-grade custody requirements. In addition to our current integrations, MMI is in the process of forming partnerships with more custody providers in order to cover an even wider breadth of organizational custody needs.

DeFi and Web3 in 2022: Where are We Now?

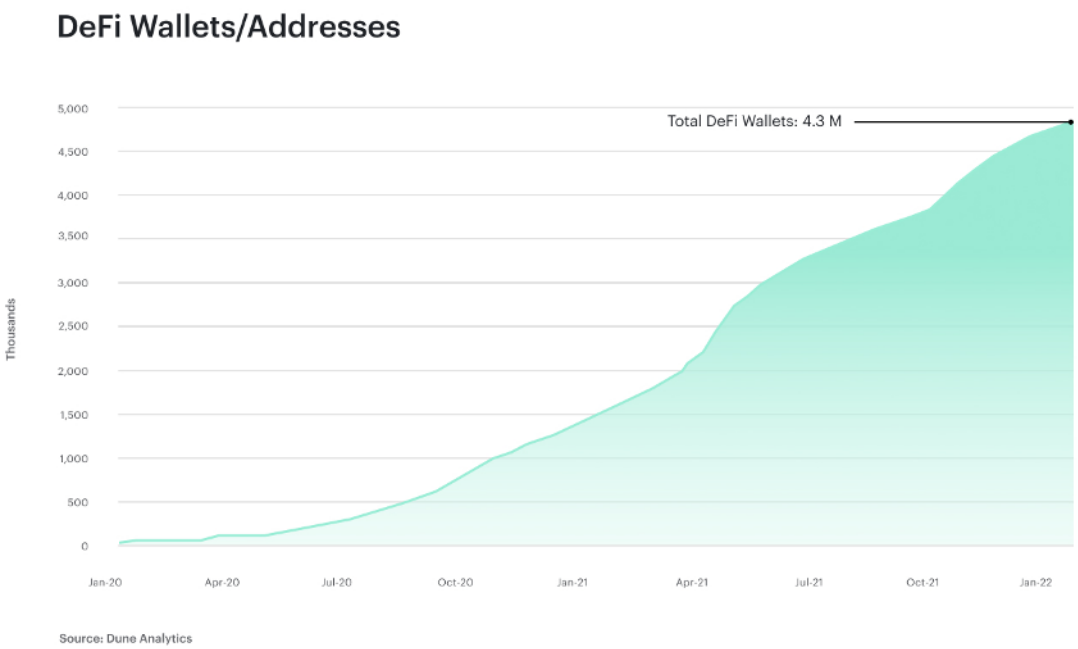
Cryptocurrencies have generally been categorized as risk-on assets as they have amplified any sizable movements of the stock market. This was evident in 2021 as stimulus and vaccine progress spurred economic growth including major cryptocurrencies.

However, the value of the top 100 DeFi coins by market capitalization has fallen to $105B as of the end of January 2022. The downward spiral from December 2021 continued as the macro narrative to tackle inflation using interest rate hikes made all investments, not just crypto, less attractive relative to the new and improved “risk-free” rate. During the downward market, ETH and EVM compatible chains proved themselves superior to other chains as decentralized applications suffered significant downside.



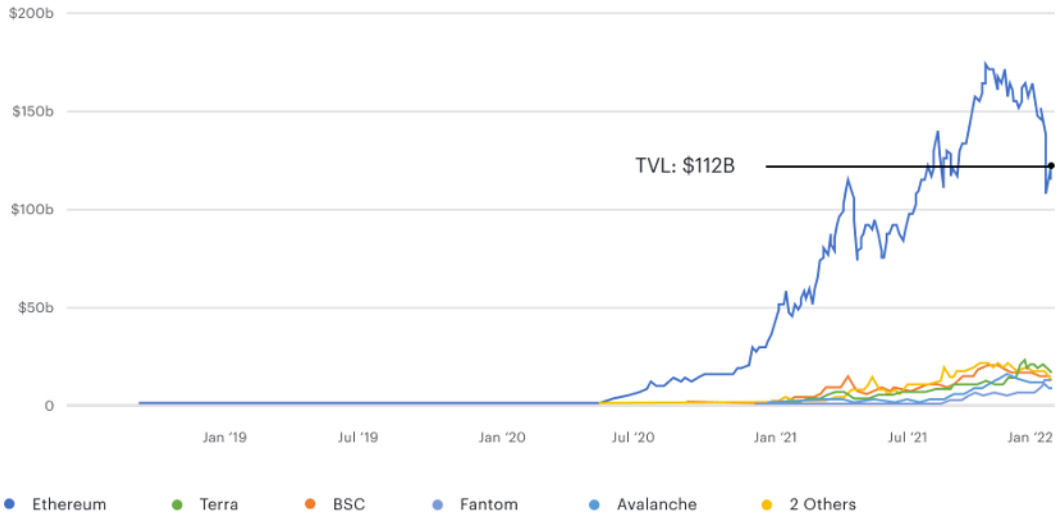
Source: CoinGecko

Despite the downturn, adoption continued as the number of DeFi wallets rose to 4.3M unique addresses in January 2022. Although users may have multiple wallets/addresses this data point serves as a worthy pulse on the overall health of the DeFi ecosystem.



These wallets interact with various products across different DeFi protocols to predominately borrow, lend and exchange cryptocurrencies. Therefore, it's not surprising to see the total value locked in DeFi also trending higher and demonstrating real value for DeFi users. The total value locked on Ethereum dropped to $112B in the month of January after reaching an all time high of $167B mid-November last year. Despite the drop, Ethereum still remains to be the dominant chain commanding ~60% of the entire DeFi TVL.

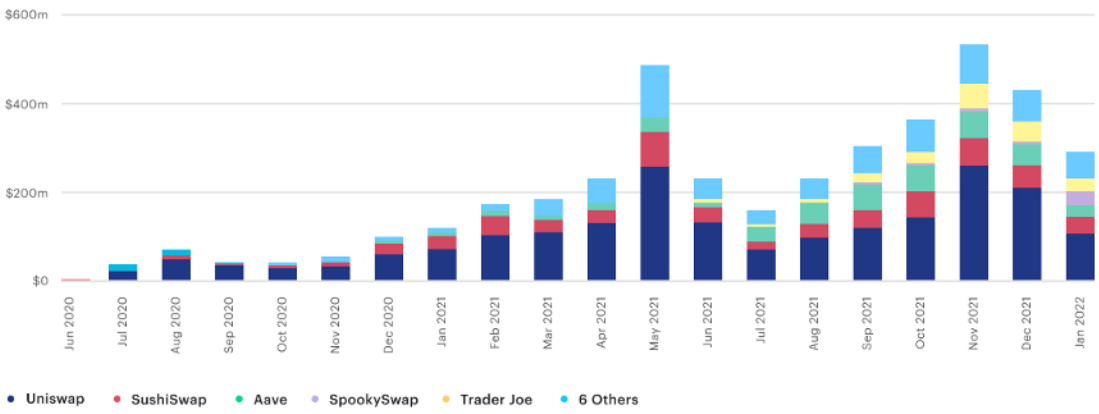
Total Value Locked on Smart Contract Platforms



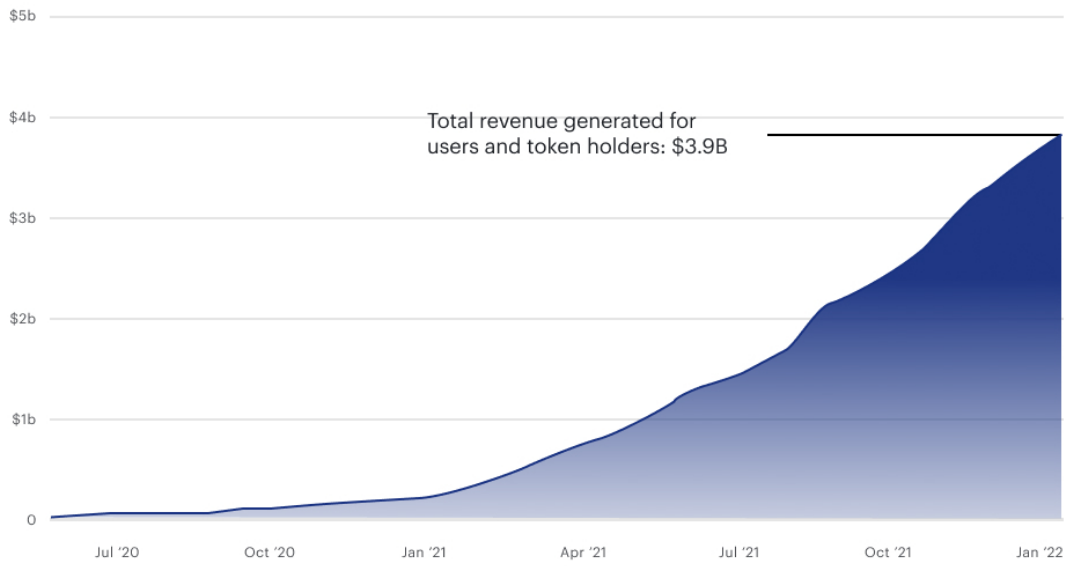
Source: The Block

Monthly revenue generated by popular DeFi protocols declined back to summer levels of last year, at around $280M. However, SpookySwap, a DEX for the Fantom Opera network, doubled it's revenue since December 2021. Overall, the cumulative revenue has risen to be over $3.9B since June 2020.

Monthly DeFi Revenue



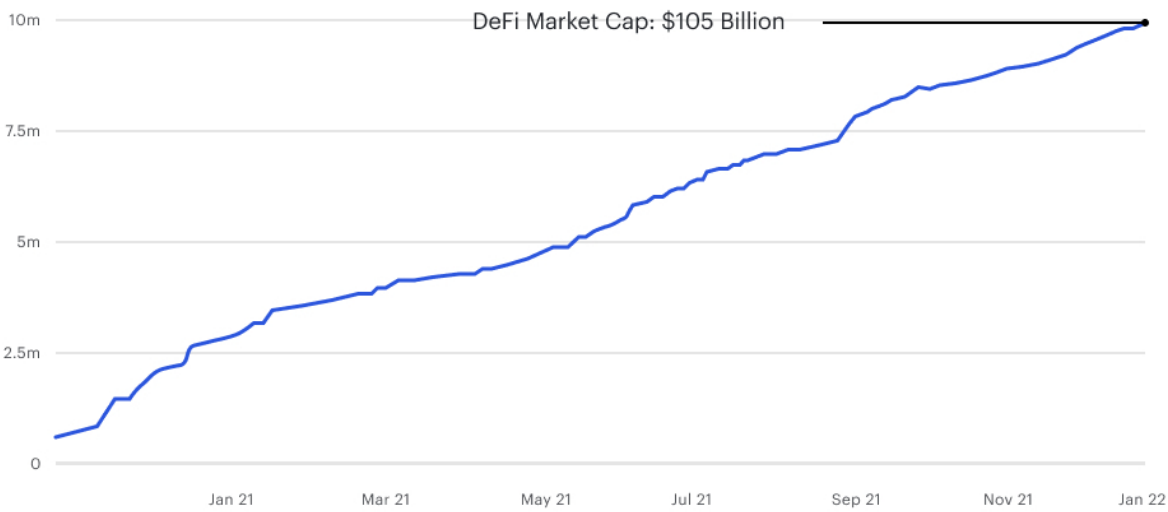
Cumulative DeFi Revenue



Source: The Block

The total value staked in the ETH 2.0 contract has been steadily increasing as well and continues to provide yield-bearing opportunities in DeFi. Over $8.8M has been staked, representing 7.4% of the circulating supply.

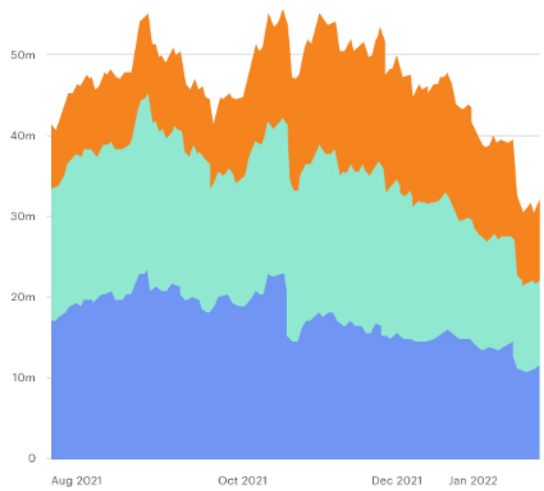
ETH in ETH 2.0 Deposit Contract



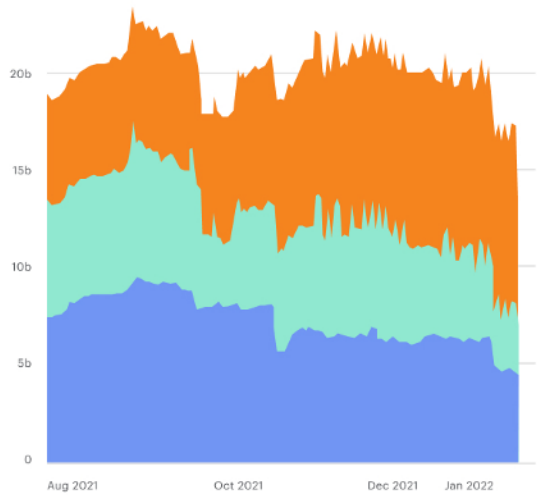
Source: The Block

Deposits and loans have decreased for the month across several lending protocols. The total value of deposits for the three largest lending protocols at the end of January was $31.2B, down 26% on average since December while the total value of borrowing was $14.9B, down 23% on average since December.

Total Deposits: $31.2M

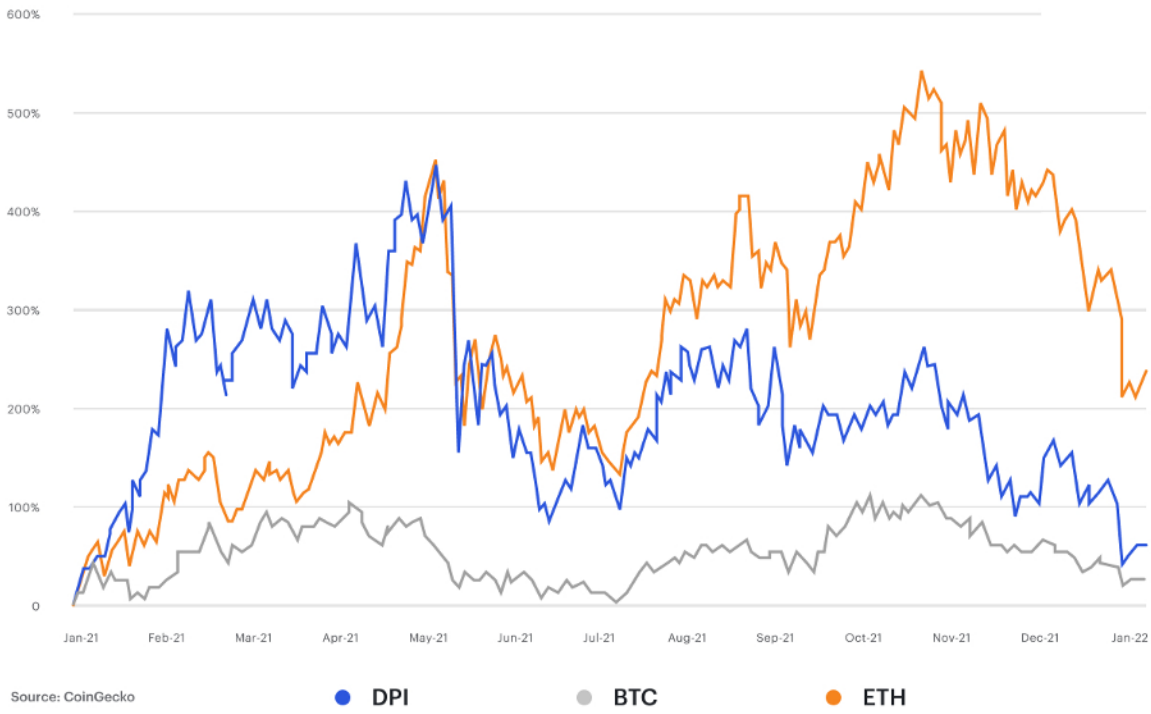


Total Deposits: $14.9M



The performance of the DeFi Pulse Index (DPI), which is a capitalization-weighted index that tracks the performance of DeFi, performed +61.4% year-on-year and -36% year-to-date. Meanwhile, ETH performed +246.7% year-on-year and -30% year-to-date, outperforming both Bitcoin and the index.

ETH vs BTC vs DPI

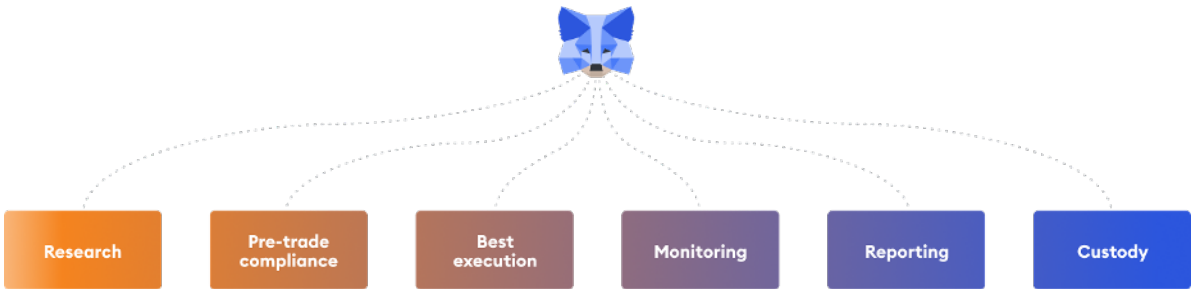


Increasing activity and interest in the DeFi market is a testament that millions of people are using the Ethereum blockchain to build and participate in a new economic system that is powered by code—one that sets new standards for financial access, opportunity, and trust. Countless numbers of institutional DeFi milestones in 2021 demonstrate an “up only” journey of institutional interest in 2022.

Engaging in DeFi and Web3

Since launching in February 2021, MetaMask Institutional (MMI) has become the most trusted DeFi wallet and Web3 gateway for crypto funds, market makers, and trading desks. We offer organizations unrivaled access to the DeFi ecosystem with institution-required security, operational efficiency, and compliance. We provide the institutional controls they need to be able to securely engage in DeFi and Web3.

We simplify capital deployment into DeFi applications with the following services:



And we deliver the following key benefits:

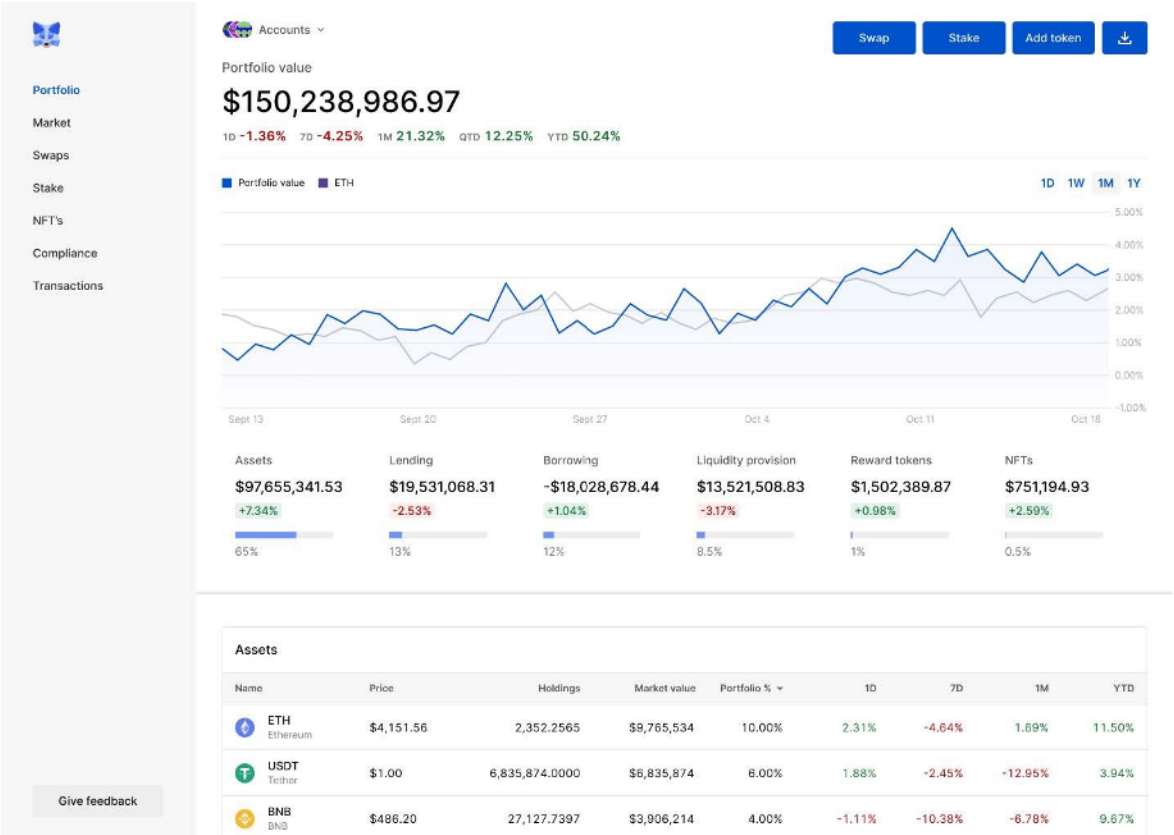
- **Unrivaled Access to DeFi**
  17,000+ integrated venues for trading, staking, lending, borrowing, and more
- **Leading Custody Solutions**
  Institution-compliant key storage, smooth multi-sig approvals, and optimized trade flows
- **All-in Compliance**
  Groundbreaking compliance on DeFi pools, with pre and post-trade KYT

Access. Custody. Compliance.
All of Defi. No compromises.

MMI successfully bridges the gap between traditional finance and DeFi by connecting to custodians—allowing crypto funds, market makers, trading desks and other organizations to access cutting-edge crypto native opportunities in a secure and compliant manner.

Over the last year, MMI integrated with three custodians and custody technology providers, developed a standardized custodian integration process and premium experience, and released multichain access for custodial accounts. These new partnerships give organizations a wide variety of custody solutions to choose from, and the new multichain feature enables organizations to access and bridge digital assets across EVM chains through their custodians—a profound offering for institutions, unlocking access to L2s and sidechains.

This month we launched the MMI DeFi and Web3 Portfolio Dashboard, the ecosystem's first DeFi-focused dashboard for organizations. It provides a consolidated view of DeFi assets across the Ethereum mainnet, Polygon, and BSC chains, with more EVMs to follow. It breaks down an organization's DeFi portfolio and portrays the data on one dashboard with time-weighted portfolio returns.



In addition, through the dapp, the MMI team is able to create smart contracts to further expand DeFi functionalities—something impossible to do on the browser extension. So really, the launch of the dapp is only the beginning.

"The portfolio dashboard is an institutional canvas created by the MMI team. It allows us to solve the most important needs for organizations, build a rich and tailored product and user experience, and rapidly innovate within DeFi and Web3 "—Johann Bornman, Product Lead of MetaMask Institutional

Once foundational features are built into the portfolio dashboard, investors will be able to seamlessly execute the following actions:

- Swap cryptocurrencies
- Lending, borrowing, and liquidity provision
- Buy, Manage, and Sell NFTs
- Stake tokens
- Bridge assets
- Run pre- and post-trade compliance
- Execute smart contracts
- Access yield and fixed income products
- Gather alpha from ConsenSys' crypto economic research reports
- Obtain portfolio attribution

Our focus is to build a truly institutional product and user experience. Incorporating these features into the MMI DeFi and Web3 Portfolio Dashboard expands utility and facilitates wider investor engagement across the ecosystem.

LEARN MORE ABOUT METAMASK INSTITUTIONAL

Conclusion

The last 18 months saw radical financial innovation accompanied by radical investment returns and opportunities across DeFi. The pivot of organizations to investigate how to viably engage with the ecosystem, has prompted an increase in the products and services geared toward research, pre-trade compliance, best execution, reporting, and custody—to satisfy institutional requirements for small and mid-cap crypto funds, and larger more regulated entities alike.

MetaMask Institutional empowers institutions with the tools, infrastructure, and services to interact with DeFi and Web3.

GET IN TOUCH WITH METAMASK INSTITUTIONAL

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Appendix

A comprehensive list of Institutional DeFi milestones in 2021

January

- BlackRock files with SEC to invest in bitcoin futures for two of its funds
- Anchorage becomes first federally chartered digital asset bank
- OCC provides guidance, allowing US banks can conduct payments using stablecoins
- SkyBridge launches Bitcoin fund with $310mm AUM
- Osprey Funds launches OTC bitcoin trust, competitor to GBTC

February

- BNY Mellon forms new digital asset unit
- MasterCard to enable crypto purchases for all merchants
- BlackRock begins purchasing bitcoin
- Deutsche Bank plans to offer crypto custody and prime brokerage

March

- Morgan Stanley offers its wealthy clients access to bitcoin funds
- NYDIG raises $200mm from Morgan Stanley, New York Life, MassMutual, Soros Fund
- Visa to enable bitcoin purchases at 70mm merchants
- Visa settles USDC transaction on Ethereum
- Goldman restarts crypto desk and explores digital asset custody
- Oaktree Capital founder, Howard Marks changes his mind about bitcoin
- Financial Action Task Force drafts 2021 crypto guidance

April

- Goldman prepares to offer crypto to wealth management clients
- Morgan Stanley files to add bitcoin exposure across a dozen institutional funds
- JPMorgan plans to launch active bitcoin fund
- NYDIG raises $100m from Liberty Mutual insurance, Starr insurance and New York Life
- Consensys raises $65m with JPMorgan, Mastercard, UBS, Others
- Baillie Gifford leads $100mm investment in Blockchain.com
- Rothschild Investment Trust takes stake in Kraken
- European investment bank Sells EU100m bonds on Ethereum network
- Brevin Howard hedge fund to begin buying crypto
- Dan Loeb's Third Point files as a Coinbase custody customer
- University of Wyoming allocates $4M to staking

May

- Hedge Funds: Point72, Millennium and Matrix setting up crypto funds
- Bridgewater CFO leaves to become CFO of NYDIG
- FTX.US hires Citadel Securities executive as president

June

- A16Z raises $2.2bn Crypto Venture Fund
- World's Largest Interdealer Broker, TP ICAP to launch crypto trading with Fidelity and Standard Charter
- State Street creates a cryptocurrency division
- Soros Fund management starts trading bitcoin
- Texas department of banking to allow chartered banks to custody crypto
- Bitwise Raises $70m from Kravis, Druckenmiller and Bridgewater CEO David McCormick
- Crypto lender BlockFi launches institutional investor platform
- Citibank launches digital assets unit, confirming crypto plans

July

- ProFunds launches first publicly available BTC mutual fund in U.S.
- Fidelity Digital Assets to add 100 employees
- Swiss bank Sygnum becomes first bank to offer ETH 2.0 Staking
- Goldman survey finds half of investors plan to buy crypto
- Cryptocurrency firm Bullish to go public in $9 bln SPAC deal
- FTX closes $900 million funding round at an $18 billion valuation
- USDC stablecoin backer Circle to go public in $4.5B SPAC deal
- Ethereum DeFi pioneer Maker Foundation is shutting down, DAO will take over

August

- Morgan Stanley funds add more than 2.64M shares of GBTC
- Wells Fargo and JPMorgan partner with NYDIG to launch Bitcoin funds
- JPMorgan launches in-house Bitcoin fund for private bank clients
- Circle plans to become a full-reserve national digital currency bank

September

- Interactive Brokers introduces crypto trading through Paxos
- SEC is investigating decentralized crypto exchange developer Uniswap Labs: Report

October

- MetaMask Institutional announces the integration of BitGo, Cactus Custody, and Qredo
- ProShares Bitcoin ETF reach $1 billion in AUM in two days
- Pimco announces it is investing in crypto
- Houston Firefighter's Pension makes Bitcoin and Ether purchase
- Bank of America releases launches coverage of Digital Assets
- Stripe creates new team focused on building Web3 payments
- U.S. Bank announces new cryptocurrency custody services
- FTX raises over $420 million, reaches $25 billion valuation

November

- MetaMask surpasses 21 million MAUs as ConsenSys raises $200 million
- Valkyrie launching $100m on-chain DeFi fund
- Citigroup alum Matt Zhang launching $1.5b crypto fund
- Grayscale launches Solana Trust
- A hedge fund billionaire outbid crypto investors for a rare copy of the US Constitution

December

- Microstrategy purchases $82.4M in BTC
- Coinbase makes it easy to earn yield with DeFi
- Jack Dorsey's Square to change its name to Block