

May 30, 2023 | Version 2.0 | English

# WHITEPAPER

The world's first Web3 banking stack for DeFi.





# MELD WHITEPAPER

## Be Your Own Bank.

**MELD offers a comprehensive set of Web3 tools to securely make your fiat and crypto work for you. As a cross-chain DeFi protocol, MELD lets you unlock the value of your assets through lending, borrowing, trading, and generating various types of yield. The MELD ecosystem includes:**

- A layer 1 blockchain designed for high capital efficiency
- An EU-based Neobank
- A multichain non-custodial wallet
- A lending and borrowing protocol
- Crypto to fiat exchange
- The \$MELD token which is natively cross-chain and trades on 4 blockchains.

MELD began as an open-source, non-custodial liquidity protocol for borrowing fiat (USD and EUR) against crypto collateral and earning yield on deposits. In the process of building the protocol, it was apparent that handling fiat was as important as crypto to our users. As a result, MELD has created a Neobank<sup>1</sup>, MELD Finance UAB (MELD.FI), bringing DeFi and fiat together.

MELD is the first decentralized protocol that incorporates fiat loan capabilities into the crypto ecosystem. This enables low-friction transactions between crypto and fiat positions while maintaining on-chain control of digital assets.

Users manage their assets with the MELDapp (or via API) to easily access transfers, lending, borrowing, and yielding products offered by MELD and our partners. Users have peace of mind because the fiat accounts are regulated in the EU and they keep the keys to their crypto assets in a non-custodial wallet.

MELD offers both cross-chain crypto management and multi-currency fiat accounts (15 currencies). The MELD protocol (legally owned by the MELD Foundation) operates a crypto wallet called the MELDapp which supports all of the leading blockchains including Bitcoin, Ethereum, Cardano, Polygon, Avalanche, and Binance. MELD.FI is a regulated Neobank based in Lithuania supporting multiple currencies including Euro, US dollar, Yen, Swiss franc, and many more. These two entities work together to provide users with the easiest way to manage seamless conversions between crypto and fiat.

While MELD.FI has a comprehensive fiat offering, this whitepaper will be focused on the MELD DeFi<sup>2</sup> protocol. Please refer to the MELD.FI Lightpaper for a more in-depth overview of fiat offerings, that will be provided to MELD users, through the MELD.FI Mobile App.

In this whitepaper, we will cover MELD's features and associated tokenomics, which will continue to evolve with a full-scale launch in 2023-24. MELD is a firm advocate of the concept of creative destruction and strives to pursue a streamlined and sophisticated approach to optimize the potential of your crypto investments, which includes lending, borrowing, swapping, trading, and yield-bearing instruments. MELD will collaborate with the crypto and traditional finance (TradFi) communities to create a robust and easy-to-use protocol.



# Table of Contents

Executive Summary	4
Scorecard	5
What We Stand For	6
Background	7
MELD Product Market Fit	9
MELD Business Model	11
Products & Services	18
The Market	19
Our Users	44
Competitive Landscape	47
Technology	50
Risk Management	67
Customer Acquisition	69
Tokenomics	70
Token Generation Event	74
Limitations	79
Disclaimer	80
References	81



## Executive Summary

**Building a decentralized, ethical, and cross-chain liquidity protocol, MELD's goals are to be community-driven, intuitive to use, and financially empowering. MELD is joining the biggest evolution of money in human history.**

MELD is a decentralized, cross-chain liquidity protocol that aims to simplify and empower the world of finance. By bridging the gap between crypto and traditional fiat currencies, MELD offers crypto-backed loans and staking at competitive interest rates to users. Through the MELDapp or MELD Mobile app, users can collateralize their crypto assets and borrow fiat currency, receiving the loan directly in their MELD.FI bank account. Once the loan is repaid, the collateralized crypto is released. This benefits both individual crypto investors, who can use crypto-backed loans for various purposes, and crypto-related businesses that need capital for their operations and expenditures.

With the stellar rise of the crypto market and the resulting value amassed, crypto investors and other market participants (businesses, institutions, and miners) are reluctant to convert their crypto assets into fiat currency. There are mainly two causes for this, the decline in buying power of fiat currencies and the tax event triggered, in numerous jurisdictions, when converting crypto to fiat (capital gains tax).

While many individuals and businesses heavily invest in the crypto space, they still need capital to operate in the traditional economy. Individual crypto investors can use crypto-backed loans for life events like buying a house or as a line of credit. Crypto-related businesses that have large crypto positions, can use these loans as an efficient method of funding their operations and capital expenditures.

MELD delivers three key benefits to our users. First, competitive yield-bearing instruments like lending pool solution for users to safely deposit assets from all supported blockchains and generate a yield. Second, users can use their supplied collateral and borrow either crypto or fiat against this, at very competitive rates. Finally, users can move assets to and from fiat fast and efficiently, with low conversion rates and benefits like SWIFT<sup>3</sup> transfers and debit cards.

The MELD ecosystem is built with the Avalanche subnet high-performance architecture and supports a multichain crypto wallet that allows users to interact with various blockchains. The MELD lending & borrowing protocol facilitates crypto-to-crypto and crypto-to-fiat lending. Additionally, MELD offers Metapools, liquidity pools connected to real-world assets such as bonds and loans, as well as the ability to mint and redeem assets backed by gold, USD, Swiss Francs, and Yen, all managed by the MELD DAO.

At the core of the ecosystem is the \$MELD token, which serves multiple purposes, including paying for transaction fees, governance, blockchain security, liquidity pool operation, and community benefits.

MELD is open-source with support for Cardano, Ethereum, Avalanche, Bitcoin, Polygon, Moonbeam, and Binance communities in developing functionality and innovative applications. The MELDapp runs on the webs and on iOS and Android, or is accessed via an application programming interface (API) by other developers and protocols.



# Scorecard

**START DATE**

April 2021

**TYPE**

Decentralized Liquidity Protocol

**TEAM**

50

**LOCATION**

Singapore/Cayman Is.

**TOKEN TICKER**

MELD

**ENGINEERING**

SOGO Labs Pte. Ltd., Singapore

**BLOCKCHAIN**

Multiple<sup>4</sup>

**GOVERNANCE**

MELD Foundation, Cayman Is.

**TOKEN TYPE**

Deflationary

**TOTAL TOKEN SUPPLY**

4,000,000,000

**PRODUCTS**

Lending  
Borrowing  
Wrapped Assets  
Staking  
Liquidity Pools

**KEY BENEFITS**

Non-custodial  
Trustless  
Composable  
Censorship resistant  
Non-US based entity

**WHAT MAKES MELD DIFFERENT?**

1. **Unlocking the value** of your crypto without liquidating your position.
2. **Easy cross-chain** transfers, yield, and borrowing.
3. **No tax event** is triggered.
4. **Easy and fast fiat** borrowing in 15 currencies.
5. **Fiat to/from a crypto exchange** at low cost and instant settlement.
6. **Transparent** handling of crypto & fiat processes, contracts, and events.
7. **Generate yield** from your crypto via both DeFi and TradFi instruments.
8. **Non-custodial ownership**: YOU control your assets within the MELD ecosystem.



# What We Stand For

## MELD's Mission

**To level the economic landscape of the world, by building and providing easy access to DeFi products for the 99% of the global population.**

MELD believes it is essential for everyone to gain control of their financial lives and to have equal access to the financial tools that are currently accessible only to the rich, centralized institutions, and governments. We wish to provide financial freedom to the masses, including the unbanked.

We have a long-term goal to facilitate the integration of the \$15 trillion currently locked out of the global economy, including the two billion individuals worldwide that are either underbanked or unbanked. These are the people that are paying the highest fees, receiving the worst customer service, and facing the most economic difficulty in their day-to-day living.

## MELD's Vision

### Self-sovereign Financial Tools

Our vision is to create an ecosystem that empowers individuals to gain financial control by providing them with the tools and services they need to manage their money, on their terms.

Whether it's supplying crypto to generate yields, accessing low-interest borrowing facilities, or participating in staking for tokenized bonds to secure a fixed income, our central goal is to deliver comprehensive services that enable our users to take full control of their financial lives.

## MELD's Values

- **Safety**
- **Community**
- **Empowerment**
- **Access**

MELD is a community that is working towards a better future where the financial world is transparent and accessible to all. We are building products that everyone in the world can use. In addition, our products can integrate with other DeFi protocols to create new innovative solutions. It is a movement that is open to all MELD is a protocol that will give users control of their financial livelihoods.



## Background

This section describes the current economic and technological trends and challenges that go with any disruption efforts in the financial industry. Our white paper aims to explain, in detail, the procedures for unlocking the value of crypto assets within the current economic paradigm, while still benefiting from crypto price appreciation. Building on the potential of the blockchain, with a focus on increasing capital efficiency to supply innovative products for our users, MELD has grown from being the world's first decentralized protocol for crypto-backed fiat loans to providing a bridge between fiat and crypto such that users can unlock the potential of both through spending and money transfer (i.e. SWIFT, SEPA, IBAN accounts and debit cards) on the fiat side, and through yielding instruments, staking and borrowing on the crypto side.

During the past few years, advancements in blockchain technology have disrupted and fundamentally changed the way certain industries operate, and we expect this to continue for the foreseeable future. One of the immediate candidates for disruption is the financial services industry, which has been unhealthily rigid.

Financial technology companies (FinTech) look to shake up the financial sector, offering cheaper, quicker, and more transparent services to everyday consumers and businesses. The FinTech goal of increasing capital efficiency has met resistance from financial actors like banks and large financial institutions. However, DeFi realizes the lofty goal of FinTech. Leveraging blockchain technology and DeFi can provide an alternative that is more transparent, convenient, and cost-effective, leading to substantial improvements in capital efficiency. Regulations, technical debt, and conservative organizations have limited FinTech's ability to meet the goals of the digital economy, leaving this area ripe for disruption.

Macro-Economic Trends Leading to Crypto Growth in Staking and Lending & Borrowing:

- Current forecasts show that the crypto market will surpass the market cap of gold (~\$10 trillion) during the next five years.<sup>5</sup>
- Crypto holders have more than tripled worldwide to more than 500 million<sup>6</sup>
- Currently, the crypto market capitalization is over \$1 trillion<sup>7</sup>
- The majority of investors are retail investors as opposed to institutional investors<sup>8</sup>
- While retail institutions have been slow to adopt crypto, private financial firms are adopting it quickly, particularly in the tokenization of assets.<sup>9,10</sup>
- The predominant characteristic of crypto investors is to have long positions<sup>11</sup>
- 53% of investors have an annual income of less than \$80k USD<sup>12</sup>
- 33% of crypto investors have more than 50% of their portfolio in crypto assets<sup>12</sup>

In today's market, users typically sell their crypto for fiat to pay everyday living expenses. Doing this eliminates the growth potential of their crypto positions and can trigger a capital gains tax event. Having the ability to borrow fiat against crypto positions is the first step in building an effective capital-efficient alternative.

The crypto market has sustained high growth and high yields over the past four years, but now that the bear market has set in, money market yields are increasing and crypto yields are falling.<sup>13, 14</sup> As the market goes into decline, it's more critical than ever for users to be able to access fiat liquidity backed by their crypto holdings. In a bear market, trading volumes are depressed, meaning there are more opportunities for crypto holders to stake their assets and earn a yield.

Millennials and Gen Z will become a more significant force in the economy in the next five years. The under-18 generation as well as millennials see crypto as a practical alternative to fiat.<sup>15</sup> This popularity helps to fuel the widespread adoption of DeFi. We observe that DeFi



is supplanting TradFi services, thus opening up a new generation of economic opportunities.

The fact that the overall market capitalization of crypto has grown from \$15 billion in January 2017 to over \$1 trillion in April 2023 makes a convincing case for the intrinsic value of what is now a recognized asset class. While witnessing increasing momentum, the widespread adoption of crypto within the global economy is still unfolding, with significant strides yet to be achieved. One of the main reasons for the limited adoption of crypto is the lack of infrastructure available to link fiat with crypto. Extracting the value of crypto still requires conversion to fiat currencies, using centralized exchanges or p2p transactions. The conversion process is complex, time-consuming, and includes high exchange fees, withdrawal fees, and capital gains taxes.

The lending and borrowing processes found in TradFi systems are usually slow, complex and bureaucratic in nature. The terms are typically unfavorable for borrowers and the process severely lacks capital efficiency. Commercial lending is inaccessible to ordinary people, and consumer lending is predatory, often leading to higher levels of indebtedness. DeFi unlocks innovative tools to the masses and makes the entire lending and borrowing process automated, secure, and composable.

The collapse of centralized crypto (CeFi<sup>16</sup>) platforms such as FTX, alongside lending and borrowing products like Celsius, Voyager, Vault, Genesis, and BlockFi, has given rise to apprehension within the crypto market. However, the decentralized alternatives to these centralized offerings continue to thrive, demonstrating that transparency and community-driven approaches can establish a significantly more robust and sustainable ecosystem. To make matters worse, the US regulatory environment has become very hostile toward crypto, compounded by massive bank indebtedness. The prevailing worldwide economic uncertainty provides a compelling rationale for embracing decentralized crypto products as a viable alternative.

To build a new generation of financial services, MELD has elected to build its own Layer 1 blockchain and work across all of the major blockchains. Each blockchain presents its own set of advantages and disadvantages, and the realm of technological innovation within this domain is in a constant state of evolution. As new technologies in blockchain appear it will propel adoption and usage but no single blockchain will dominate the market as we have seen over the past three years. The seamless interoperability of liquidity across prominent blockchains will serve as a catalyst for increased adoption and the generation of substantial value..





# MELD Product Market Fit

## PROBLEM

### **Access to cash from crypto**

If an investor wants to gain access to fiat from their crypto position, they must exit part of their crypto position, pay a capital gains tax, and will no longer have exposure to the price appreciation of their crypto.

**Expensive & Tax Inefficient**

### **Crypto-rich but cash poor**

The rise of crypto has led to a great deal of wealth accumulation with limited liquidity and access to fiat currencies. Holders of these assets expect large gains as the market grows and matures. As a result, people want to maintain their long positions.

**Capital Inefficient**

### **Lack of trust and transparency**

The centralized solutions for crypto-fiat loans have proven to be very risky. Users give up their private keys and hand over their assets to a centralized company to use their services. Centralized institutions use customers' funds on risky investments resulting in huge losses, and users have no recourse.

**Centralized & Risky**

### **Inefficient on/off ramping of assets**

Various crypto exchanges offer the ability to exchange digital assets. The problem comes when the user wishes to exchange to fiat. The process is quite arduous and filled with fees at different checkpoints along the way.

**Inefficient & Slow**

## SOLUTION

### **Crypto-collateralized loans**

Using a crypto-collateralized loan makes sense because the investor can still realize the gains in the crypto asset and has no exposure to capital gains. Additionally, the interest on the loans can be tax-deductible in some countries.

**Cheap & Tax Efficient**

### **Crypto collateralized loans**

Due to the nature of crypto being programmable and highly liquid, MELD can collateralize these assets in a smart contract and unlock up to 50% of their current value as a fiat loan.

**Capital Efficient**

### **Blockchain smart contracts**

Utilizing smart contracts, and deploying them to a blockchain creates transparency. This allows users to review the code before they decide to interact with the protocol. Users can see exactly where their funds are going, and what positions they are interacting with, and this is possible without the users having to give away their private keys. Any changes to the protocol must be in the form of a proposal followed by a vote by the users. This transparency increases real-time accountability.

**Decentralized & Transparent**

### **Instant access to cash**

Users of MELD can gain access to cash instantly from their crypto by either using a line of credit or a crypto-backed fiat loan. Users no longer must sell their crypto and be encumbered with a plethora of fees to gain access to a fiat currency.

**Fast & Methodical**



### **Custodial control of your assets**

As we have seen with FTX, BlockFi, and Celsius failures, when you hand over your crypto assets you introduce 3rd party risk. The user has no choice but to give up ownership of the crypto to gain access to these platforms.

### **Users Must Surrender Ownership of Their Assets**

### **Non-custodial protocol**

Users who use the MELD protocol do not hand over the ownership of their crypto. Users keep their private keys and can decide to act in a way they see fit. Assets are locked on the blockchain, not under custody by a company that can go bankrupt.

### **Users Maintain Ownership of Their Assets**

### **Credit checks**

Credit checks can be burdensome and resource-intensive. In addition, many people are unable to interact with certain processes due to the inability to pass a credit check.

### **Burdensome, Invasive, and not Inclusive**

### **No credit checks**

MELD does not perform any credit checks, which could impact a user's credit score. Any loans, or credits taken from the protocol, are through smart contracts with the value of crypto as collateral.

### **Secured by Smart Contracts, and Inclusive**

### **Low liquidity**

If you are working on a centralized exchange or on an on-ramp/off-ramp partner, then moving fiat in and out of crypto is expensive and has a great number of restrictions imposed on a user.

### **Slow & Expensive**

### **High liquidity**

When a user has a MELD.FI fiat account and the MELDapp web3 non-custodial crypto wallet, users can move fiat in and out of crypto fast and efficiently with low exchange rates and instant settlement. All this is possible within a single, cohesive MELD ecosystem, eliminating the need to switch between multiple platforms or rely on 3rd party providers.

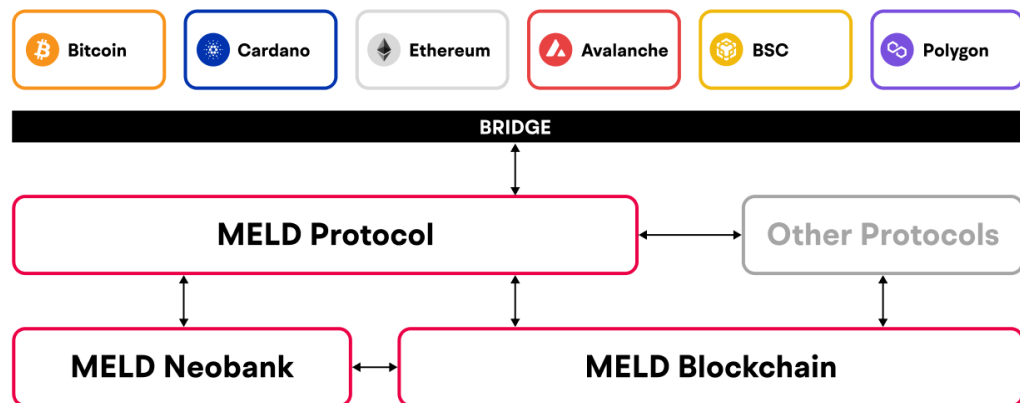
### **Fast & Cost-effective**



# MELD Business Model

MELD's business model revolves around several core operations: Supplying, Borrowing, Liquidating, MELD Vaults, MELD.FI, MELD Web, Mobile, and API. These components together form a cohesive ecosystem that facilitates a seamless and robust DeFi experience for users.

MELD's goal is to provide highly capital-efficient financial products and infrastructure for the masses. To do this we have created a high-performance blockchain connecting DeFi lending and borrowing with MELD.FI, an EU-licensed Neobank, giving users access to fiat currencies. With these three pillars users and projects can save, earn, supply, borrow and spend their digital assets regardless if they are crypto or fiat.



(Fig 1: MELD offering model)

## MELD Blockchain

The MELD blockchain provides the MELD protocol and users with a highly specialized network to build DeFi applications with high capital efficiency and tight connections into fiat banking rails with SEPA<sup>17</sup> and SWIFT, through its partnership with MELD.FI. There are two drivers for building our own blockchain. First, we want to have predictable and controllable transaction fees and TPS. We have designed the tokenomics to have sub-1 US cent transactions and a target of 2000 TPS. This lays the groundwork for capital-efficient DeFi products without having to worry about gas fee exposure. For more in-depth explanations and details, please refer to the [MELD Blockchain](#) section under Products and Services.

## MELD.FI

Since MELD's inception, MELD.FI has evolved into a pivotal element within the ecosystem, assuming an increasingly integral role. With the ability to safely handle fiat and provide tight integration with the MELD protocol via the MELD blockchain, MELD.FI will be able to operate in a regulated jurisdiction and provide reliable services to MELD users. MELD.FI is a separate legal entity from the MELD Foundation and MELD protocol, providing fiat accounts and services via a commercial agreement between MELD.FI and the MELD Foundation.

There are no prerequisites between MELD.FI bank accounts and the MELD protocol or blockchain, each operate independently of one another. Users can have a MELD.FI bank account independent of the crypto section of the MELD protocol or the MELDapp. Additionally, users can use their MELD.FI bank account with Binance, Kucoin, or other on-ramp/off-ramp services.

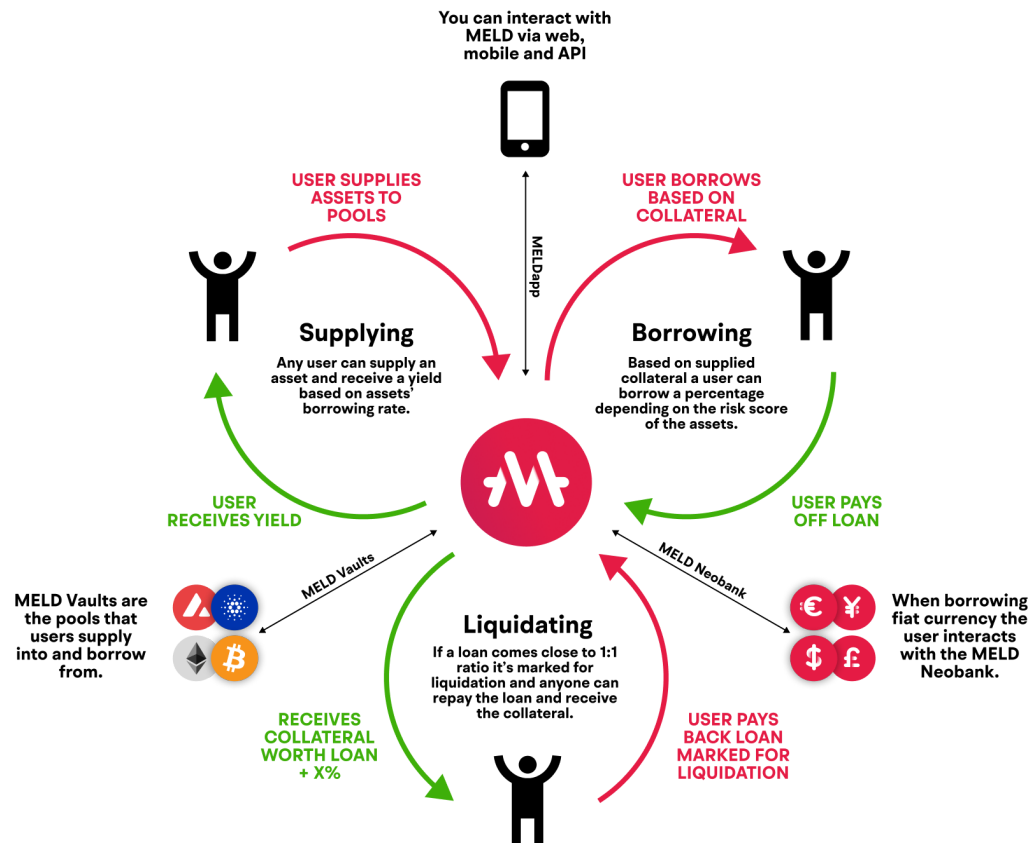


## MELD Protocol (Lending & Borrowing)

MELD is a pioneering decentralized lending and borrowing protocol, distinguished by its non-custodial nature. Functioning seamlessly across multiple blockchains, MELD establishes a distinctive liquidity market. Governed by the MELD token, this ecosystem provides users with the freedom to contribute crypto assets, and borrow crypto or fiat currencies, all within a transparent and secure framework. The platform ensures a dynamic equilibrium between suppliers and borrowers, fostering stability while delivering competitive yields.

At the core of MELD's lending and borrowing services are the MELD Vaults, which are community-managed liquidity pools that hold a single asset per vault. These Vaults not only facilitate lending and borrowing but also generate yields, contributing to the ecosystem's overall health. In parallel, MELD bridges the gap to TradFi through MELD.FI – providing users with an avenue for fiat loans and an integrated banking experience.

Accessible through the MELDapp on the web, mobile, and API, MELD ensures users can engage with its services with ease and convenience. MELD's forward-thinking approach to DeFi, characterized by its cross-chain lending, borrowing, and integrated fiat banking services, positions it at the forefront of the decentralized finance evolution.



(Fig 2: MELD Lending and Borrowing Process)

### SUPPLYING

In the supplying phase, users provide assets to a specific MELD Vault denominated in that asset (such as wBTC or ADA), receiving a yield based on two factors; the asset's utilization through borrowing (based on supply and demand), the more the asset is borrowed the higher the yield for the supplier. As a secondary benefit, the specific token optimizes the deployment of idle assets, generating yield instead of allowing them to remain dormant in



the Vault. This creates a *floor yield* unique to the MELD protocol and makes the MELD Vaults much more capital efficient. By supplying an asset, users essentially become the backbone of the MELD ecosystem, providing the liquidity that enables other users to borrow funds and generate yield across the ecosystem. When a user supplies to the MELD Vault, they are rewarded for being a liquidity provider. This not only ensures the stability of the system but also allows suppliers to earn attractive yields on their assets.

An important note, users do not have to borrow anything in order to get a yield from supplying. For current interest/yield rates, visit [app.meld.com](https://app.meld.com) (*lending and borrowing coming Q4, 2023*).

Once you have supplied assets to a Vault, they will immediately begin to accrue a yield, which is paid out based on the type of asset, for example, ADA yields every five days while ETH yields every minute. Users can withdraw their assets at any time, there is no lockup period for supplied assets.

### **BORROWING**

Borrowing follows the Supplying phase. Users can borrow a certain percentage of the value of the collateral they have deposited, depending on the asset's risk score. For instance, if you deposit 3 ETH as collateral, you may instantly borrow ~\$2500, sent directly to your MELD.FI bank account. The max borrowing amount and interest can vary based on the current market conditions and the volatility of the specific asset.

The flexibility of MELD's borrowing mechanism allows users to pay off their loans at their convenience, provided they manage their debt positions appropriately. This ensures that the borrowing experience is both user-friendly and financially prudent.

Borrowers do not pay back their loan in a traditional time-based manner, instead, the interest will be added to the amount borrowed and will increase at a time interval based on the specific asset, for example, ADA yields every five days while ETH yields every minute. Furthermore, users can choose to pay down the debt at their discretion.

### **LIQUIDATING**

Liquidating is a critical process in the MELD ecosystem. If a loan's collateral-to-debt ratio nears a ratio specified by the MELD risk model, the loan is marked for liquidation. Then a 'liquidator' (a permissionless role that anyone can undertake), can repay the loan and receive the collateral. The liquidator will repay the outstanding loan amount, and in return, receive the collateral (worth more than the loan) used to initiate the loan from the MELD Vaults. This process protects the system from potential defaults and helps maintain the overall health of the protocol.

Depending on the asset, a liquidator can earn from 5% to 15% per liquidation, providing a financial incentive to keep the MELD protocol operating efficiently. Liquidators will execute liquidations via a bot. MELD provides an open-source basic liquidation bot for the protocol, which users can customize at their own discretion.

### **MELD VAULTS**

The MELD Vaults serve as foundational liquidity pool infrastructure, enabling users to both supply and borrow assets. The MELD Vaults accommodate different assets across multiple blockchains, making the MELD platform interoperable and versatile. By virtue of hosting a variety of assets, MELD Vaults provide an avenue for users to maximize their yield opportunities.

The MELD Vaults also facilitate the deployment of idle assets into a specified yielding instrument. This distinctive mechanism employed by MELD sets it apart, endowing the



MELD Vaults with a floor yield that surpasses that of other lending and borrowing protocols.

MELD Vaults are the core piece of MELD technology and are poised to be leveraged across an expanding range of MELD protocols in the future.

### MELDapp WEB, MOBILE & API

The MELD Web, Mobile, and API serve as portals to these financial services. Through these platforms, users can easily supply, borrow, and liquidate their assets. This multifaceted accessibility ensures that users can engage with MELD's services, whether they are at home or on the move, providing an all-encompassing financial solution that meets the dynamic needs of modern users.

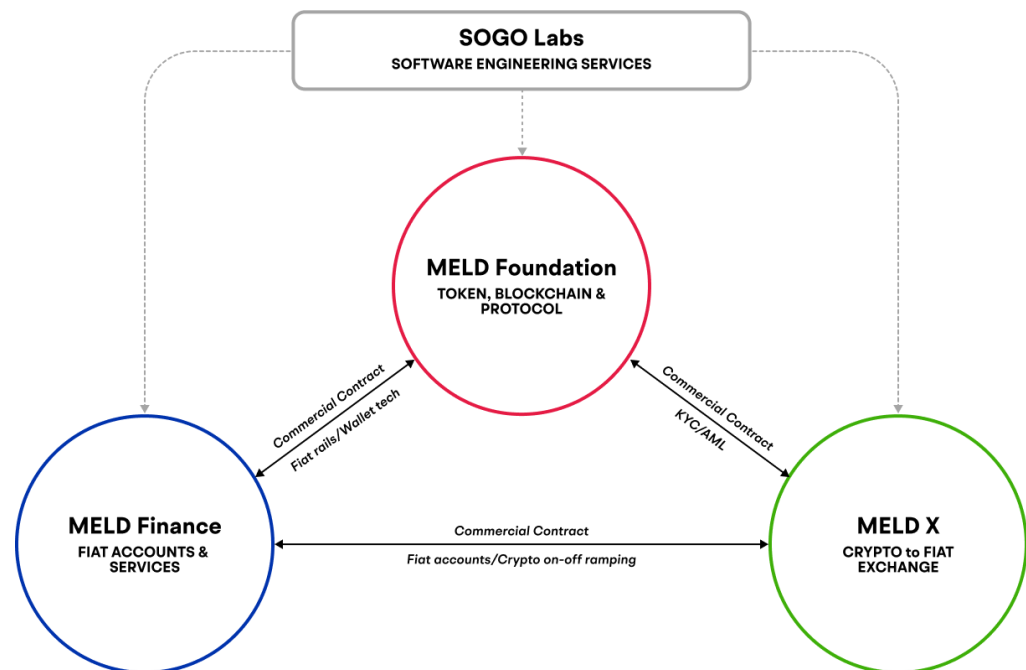
### MELD.FI

MELD.FI plays a vital role in bridging TradFi and DeFi within the MELD ecosystem. As a regulated entity, it provides secure handling of fiat currencies and reliable financial services to users. It offers a seamless transition between crypto and fiat assets, thereby enhancing the MELD protocol's functionality. Users can maintain a MELD.FI bank account independent of the crypto protocol or MELDapp, offering flexibility and access to a wider financial market. MELD.FI represents MELD's innovative approach to creating an accessible and efficient financial platform.

## Multi-Chain

MELD is dedicated to fostering a multi-chain ecosystem, initially launching on the Cardano blockchain and subsequently expanding to encompass purpose-built Layer 1 solutions and prominent blockchains like Ethereum, Avalanche, Polygon, and Binance Smart Chain. Our objective is to construct our technology to encompass and embrace all these chains while remaining adaptable to future blockchain trends and emerging platforms.

## MELD Entities



(Fig 3: MELD Offering working entities)



## MELD FOUNDATION

The MELD Foundation is established to nurture, supervise, and expand the MELD protocol, shaping it into a decentralized, non-custodial ecosystem. It coordinates with third parties for technological development, community management, and the establishment of commercial contracts and partnerships.

The Foundation's initial role is to serve as the interim steward of the MELD protocol until it transitions into a fully decentralized autonomous organization (DAO). This process, projected to span approximately three years, will see the Foundation's governance gradually taken over by the DAO. Subsequently, the Foundation's responsibilities will evolve and manage commercial contracts, provide risk analysis, and be under the supervision of the ecosystem.

As the custodian of the MELD treasury, the MELD Foundation holds the majority of unissued MELD tokens (1 billion) and all ADA block rewards generated by the ISPO. The Foundation, in collaboration with MELD.FI, MELD X (a regulated Lithuanian exchange), and MELD Digital, engage in a diverse range of commercial initiatives. These encompass exchange listings, partnerships with financial institutions, implementation of rigorous KYC/AML procedures, facilitating fiat/crypto on-ramping and off-ramping, as well as forging protocol partnerships.

The Foundation operates under a Board of Advisors, a Foundation Charter, and a Steering Committee, which convenes quarterly to guide the protocol's evolution and supervise the Foundation's activities. The MELD Foundation is subject to a supervisory body, with mandates to administer the protocol and treasury.

- Foundations are governed by a supervisory body.
- Foundations are to administer treasury.
- The Foundation will manage MELD Improvement Proposals (MIPs) and governance voting.

The MELD Foundation facilitates the voting process within the MELDapp, providing oversight and transparency into the MIP submission process.

The MELD Chief Investment Officer oversees the treasury operations, ensuring robust and efficient financial management. Adhering to a robust risk management framework, MELD places significant emphasis on diversification across different institutions and DeFi protocols. Through the establishment of credit and market risk limits on a diverse array of crypto assets, including stablecoins, MELD ensures comprehensive risk mitigation. This diligent approach enables the effective execution of MELD's financial plans, providing ample runway and strategically hedging planned expenditures across multiple currencies.

MELD's investment strategy is principally conservative, focusing on maintaining a liquid portfolio that supports business requirements while accruing interest on both fiat and crypto holdings. Fiat currencies are held in various financial institutions and invested in money market funds, while crypto assets are deployed in credible DeFi protocols. To capitalize on market opportunities, MELD reserves a portion of its portfolio for higher-risk trades and engages in market-neutral trades in arbitrage scenarios.

The treasury collaborates with external partners to oversee the management of the MELD token, guaranteeing ample liquidity and alignment of prices across various DEXes and CEXes. However, customer crypto fund management remains in the hands of the users, upholding MELD's commitment to a non-custodial ethos.



## **MELD DAO**

The overarching objective is to transition the operation of the MELD protocol to a DAO or establish a framework, thereby granting full control to MELD Governance token holders. Token holders will have the ability to engage with the DAO through the MELDapp.

Further information regarding the governance structure of the DAO can be found in the governance section of this whitepaper.

## **MELD X**

MELD X is a Lithuania-based regulated exchange that has a commercial partnership with the MELD Foundation. The exchange is responsible for crypto-to-fiat transfers and will play a crucial role in ensuring the liquidity of the MELD ecosystem. The exchange enables MELD token holders to easily convert their tokens to fiat currency and vice versa. This enables users to take advantage of opportunities in the broader financial markets and expand the use cases for MELD tokens beyond the MELD ecosystem.

MELD X operates under the oversight of the Financial Crime Investigation Service under the Ministry of the Interior of the Republic of Lithuania and has a board of advisors. The MELD Foundation will ensure that the exchange operates in compliance with relevant laws and regulations and that it meets the highest standards of security and transparency.

## **MELD Digital**

MELD Digital will serve as a Virtual Asset Service Provider within the MELD ecosystem. Its pivotal role involves the handling of tokens and tokenized assets, the minting and burning of virtual assets, and regulatory compliance processes respectively. While the current scope of MELD Digital is limited, its future trajectory entails significant expansion and an expanded role.

## **MELD Revenue**

The MELD DAO earns revenue from various forms of economic activity both on the MELD blockchain and in the MELD protocol. For a detailed list of current planned revenue please see Revenue Structure in the Tokenomics section.

## **MELD.FI**

MELD.FI is a regulated Electronic Money License holder based in Lithuania having a commercial agreement with the MELD Foundation. MELD.FI is a Neobank providing deposit account services supporting SWIFT and SEPA transfers as well as debit card services.

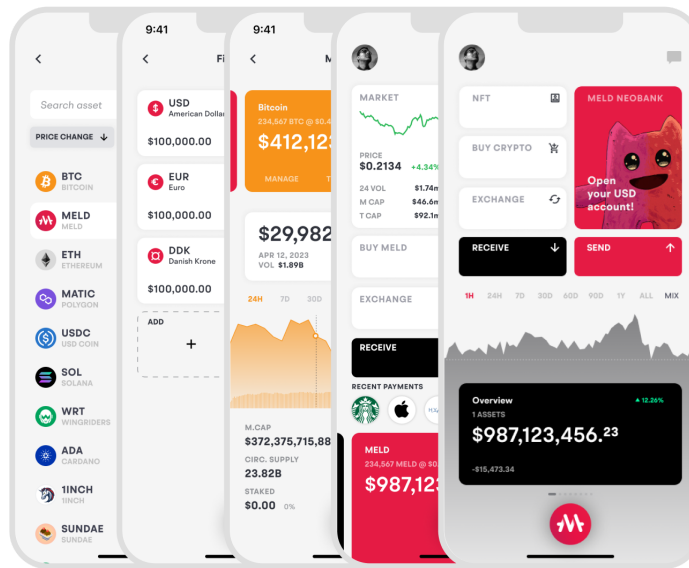
MELD.FI embodies the pioneering spirit of MELD by facilitating one side of a harmonious union between the well-established world of TradFi and the cutting-edge innovations of DeFi. MELD.FI seeks to redefine the banking experience by seamlessly incorporating fundamental banking infrastructure—such as account management, cards, and payments—while intuitively integrating DeFi products into a user-centric platform. The intent is to create a banking ecosystem that respects regulatory requirements and leverages the advancements of blockchain technology.

MELD.FI presents a core portfolio of core banking products, each meticulously designed to cater to the evolving needs of a global clientele. This product suite includes IBAN accounts, a mobile banking app, debit cards, and robust risk management. The banking app is the nucleus of the MELD.FI offering, providing users with a seamless interface to access both conventional banking services and a wide array of DeFi features. It is devised to ensure that





users can effortlessly sign up, complete KYC procedures, create and manage accounts, and order cards.



Version 1 of the MELD.FI mobile app. The mobile app will be available on iOS and Android. Additionally, the app will support non-custodial crypto wallet functionality like send, receive, swap, exchange, buy, and stake.

(Fig 4: MELD.FI Mobile App mockup)

The MELD.FI mobile and web applications stand as examples of the company's commitment to bridging the gap between traditional banking services and DeFi solutions. By providing users with a familiar and user-friendly platform, MELD.FI ensures a smooth transition into the world of blockchain-based financial solutions. Users can access a myriad of financial possibilities, from the basics of account management to the more advanced offerings of DeFi, all within a single, unified graphical user interface.

Beyond simply providing services, MELD.FI places a strong emphasis on security, transparency, and user empowerment. MELD.FI does not handle crypto currency, only fiat. Crypto wallet functionality is provided by the MELD Foundation. MELD.FI is not only a gateway to new financial possibilities, but also a platform that respects and values the rights and freedoms of its users, forging a new path in the banking world that merges the best aspects of both traditional and decentralized finance.

MELD.FI will offer customers retail deposit account support in 15 fiat currencies:

**AUD CAD CHF DKK EUR GBP HKD HUF PLN RON SEK SGD USD JPY AED**

*For a detailed overview of MELD.FI and its offerings, please refer to the MELD.FI Litepaper.*



# Products & Services

MELD's comprehensive offering serves as the bedrock for crypto users to maximize the potential of their assets. This encompasses:

**Multichain Non-Custodial Wallet with Integrated Bridging** A feature-rich wallet that enables seamless handling and movement of crypto across different blockchains.

**In-Wallet Staking** empowers users to stake their crypto assets within the wallet itself, generating a yield. Our aim is to provide staking solutions for key tokens within the MELDapp ecosystem.

**Yield-Generating Asset Supply** offers the capability to supply assets and earn higher yields on the deposited crypto holdings.

**Crypto/Fiat Borrowing** facilitates borrowing against the deposited assets, available in both crypto and fiat currencies.

**Fiat-to-Crypto Swaps and On/Off-Ramping** to bring efficient and flexible liquidity management through support for converting fiat currencies to crypto and vice versa.

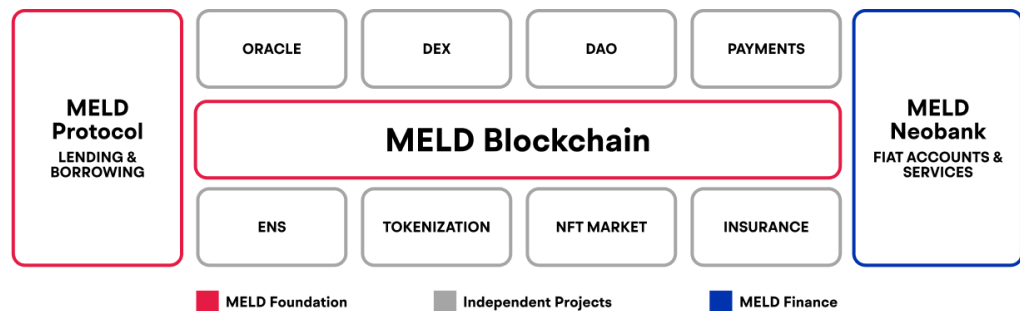
These foundational services are our primary focus, and once deployed, we will build upon them to offer more sophisticated solutions that yield even higher returns. Our ultimate goal across all MELD products and services is to ensure a globally accessible platform with no barriers to entry or biases based on gender, age, nationality, or religion.

## CROSS-CHAIN OFFERING

MELD is providing support for all of the major blockchains and tokens, with Cardano and its native tokens (CNTs) to ERC-20, ARC-20, and BEP-20 tokens as well. We adopt an agnostic approach towards different blockchains, prioritizing asset fluidity between chains, while ensuring optimal security and cost-efficiency.

## MELD Blockchain

MELD has developed a new Proof-of-Stake (PoS) EVM-compatible blockchain created specifically to facilitate MELD's goals. The MELD blockchain is an EVM-compatible, highly scalable, and efficient network designed to offer a maximum throughput of 2000 TPS with extremely low transaction fees. The MELD blockchain is built on a cutting-edge Avalanche subnet architecture that utilizes advanced consensus mechanisms (Snow), making it highly reliable and secure. The MELD blockchain aspires to facilitate a robust developer ecosystem, enabling the creation of EVM-based smart contracts and decentralized applications with ease. The blockchain is unique in that it not only natively supports DeFi but also traditional fiat accounts through a partnership with MELD.FI.



(Fig 5: MELD Blockchain product offering)



## BLOCK REWARDS

Unlike most PoS blockchains, MELD has a unique block reward mechanic that rewards node operators and node delegators based on the blockchain's economic activity. Block rewards will come from revenue generated by the lending and borrowing protocol and other MELD products. The revenue is deposited into the MELD treasury and 20% of the revenue will be paid out in block rewards, on a rolling basis.

## NODE OPERATORS & DELEGATORS

The MELD Blockchain is PoS meaning that the blockchain is secured by Node Operators. A Node Operator must supply MELD tokens to register their node on the blockchain. The more Node Operators the more secure the blockchain is. The minimum supply is 100,000 \$MELD and the maximum is 20 million \$MELD. Additionally, Nodes with less than 20 million \$MELD staked can receive delegation for users to bring the total stake to 20 million. For the first 12 months of operation of the MELD blockchain, the Nodes will receive 6% APY for \$MELD staked to secure the network. The maximum number of Nodes will be fixed and will only be increased by a MELD Improvement Proposal (MIP) in the DAO governance and voting process. Below is a schedule for the deployment of the MELD nodes.

Period (from May 1, 2023)	0 to 6 Months	7 to 12 months	13 months and beyond
Maximum Nodes	30	60	101
Minimum MELD Staked	100k	100k	200k
Maximum MELD Staked	20m	20m	20m
Block Rewards	6% APY <sup>18</sup>	6% APY <sup>18</sup>	20% Treasury Revenue <sup>18</sup>

On the launch of the MELD blockchain we will subsidize block rewards for the first 12 months moving to a user delegation model thereafter.

The underlying concept of the blockchain is to establish seamless connectivity that deeply integrates with DeFi primitives, fiat bank accounts, and infrastructure, thereby offering a comprehensive foundation for users and projects to build upon.

## Crypto-Backed Lending & Borrowing

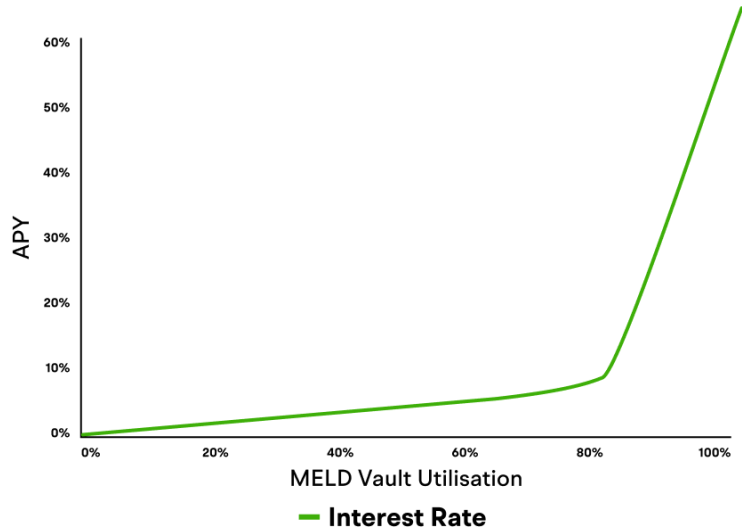
One of the key products MELD will offer will be instant crypto-backed loans. First, a user will deposit their crypto to MELD as collateral using the MELDapp. A smart contract records the terms of the loan and registers it on the blockchain.

If a user chooses to borrow against their collateral they can either take out a crypto loan or a fiat loan. Upon KYC/AML confirmation, the protocol will execute the loan and wire transfer directly to the user's MELD.FI deposit account. Users will be able to manage their loans and collateral directly from the MELDapp. In order for a user to be able to take out a fiat loan they will need to have a MELD.FI deposit account.

## YIELD & INTEREST

Both the supply yield and loan interest are calculated and allocated to collateral and debt, respectively. Consequently, when a user supplies an asset, the generated yield is appended to their total collateral, thereby enabling them to withdraw or borrow against a higher value. Similarly, the interest on the user's loan is automatically accrued and incorporated into the overall outstanding debt.

The interest rate is determined by the utilization rate of the pools, meaning that as people borrow more the interest rate goes up, and as people deposit more or repay their loans the interest rate goes back down.



(Fig 6: Basic MELD vault piecewise linear interest curve)

The interest rate is calculated using a set of protocol parameters, in particular a base rate, an initial slope, a secondary slope, and an optimal utilization rate. The interest rate is then calculated based on the current utilization rate as follows:

$$R_t = \begin{cases} B + \frac{U_t}{U_{\text{Optimal}}} S_1 & \text{if } U_t \leq U_{\text{Optimal}} \\ B + S_1 + \frac{U_t - U_{\text{Optimal}}}{1 - U_{\text{Optimal}}} S_2 & \text{if } U_t > U_{\text{Optimal}} \end{cases}$$

The supply yield rate is determined by both the current interest rate and the current utilization rate, along with a parameter called the reserve factor, as follows:

$$SR_t = (R_t - 0.3\%) * U_t * (1 - RF)$$

Our goal at MELD is to build a lending and borrowing protocol that leads to a user having a positive net interest rate. For example, a user deposits \$100 in AVAX for one year and the average annualized yield is 9% but the user has borrowed \$50 in USD and pays an average annualized interest rate of 4%. They will then have an annual net interest of 7%. They have borrowed but earned a yield along the way. This is the power of allowing users to be both suppliers of liquidity and borrowers at the same time.

#### LOAN HEALTH SCORE, REPAYMENT & LIQUIDATION

If the collateral the user supplies goes down in value compared to the asset they have borrowed then the users have two actions they can take to avoid liquidation. First, they can add more collateral to increase the total value they are borrowing against. Second, the user can pay back some of the loans to bring the total debt down. Alternatively, the user can ignore the position entirely and the loan will be liquidated, and their debt paid off. The user will lose the collateral they put up but they will be able to keep the assets they borrowed. The user does not default, they simply close the loan.

The interest on the debt is slowly building on the user's debt over time. There are no required periodic payments, late fees, or similar penalties that are typically associated with traditional debt like mortgages and credit card debt.



Users pay back their loans in crypto, via the MELDapp on the blockchain. When a user wants to pay down their loan position, they will need to convert fiat to crypto or use crypto to pay off their loan.

Loans are issued at a loan-to-value (LTV) ratio based on the risk score of the asset. The risk is calculated based on several parameters such as liquidity in DEXs, 24-hour trading volume, price fluctuation, market cap, and other related market factors.

The borrowing capacity of a user, loan-to-value ratio, and the liquidation threshold for a loan is determined by the collateral and debt assets, taking into account their respective risk parameters.

If the collateral value falls in value or the debt increases, the health score of the loan will worsen until it ultimately opens for liquidation. Before this happens users can opt-in to be notified if the loan-to-value ratio reaches certain critical thresholds, prompting them to add more collateral or repay parts of the loan. Once the LTV passes the liquidation threshold, a liquidation event can be executed in a permissionless manner (i.e. anyone can participate). The user keeps the fiat they borrowed, and the liquidated debt is considered to be settled.

For example, a user deposits \$1,000 worth of crypto and borrows \$500 of fiat against it. The value of the crypto falls to the liquidation threshold, which in this case is \$600, or a loan to value of around 83% (keep in mind this depends on the risk factor of the crypto). The loan is then available to be liquidated by anyone. A liquidator will pay the loan off, paying back the \$500 in stablecoins, and will receive the outstanding collateral worth \$600. The liquidator earns a profit of \$100 for executing the liquidation. The loan is paid off and the borrower's position is closed and they can keep the \$500 they borrowed.

This protocol aims to innovate in the debt markets by creating extremely capital-efficient products and services powered by blockchain technology, and by promoting availability, transparency, and empowerment. This will allow the protocol to give the most attractive borrowing rates to customers worldwide.

#### SUPPLYING & YIELD BOOST

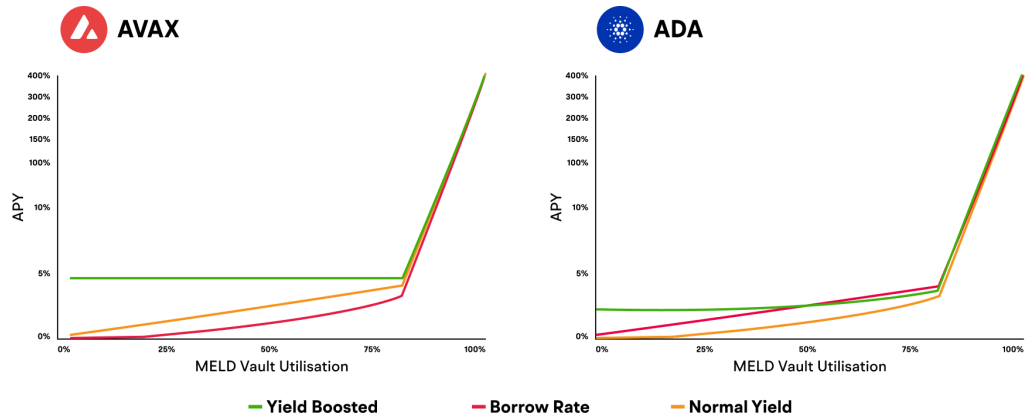
MELD can provide more capital-efficient loans than our competitors on the market today due to the staking of unused liquidity in the vaults. Since staking significantly enhances the floor yield within a specific vault, it presents a highly efficient and lucrative avenue for utilizing crypto. It is important to remember that the base supply rate is determined by both the interest rate and utilization rate, further contributing to the overall efficiency and profitability of the system.

$$SR_t = (R_t - 0.3\%) * U_t * (1 - RF)$$

With the yield boost, the "idle" assets in the pool are used for staking to boost the yield of suppliers even when there are no borrowers paying interest. The boosted supply rate is then calculated as:

$$R_{\text{boosted}} = (R_t - 0.3\%) * U_t * (1 - RF) + (1 - U_t) * R_s$$

All contracts and terms are open and available for evaluation and auditing. All parts of the process have been automated, including the KYC/AML.



(Fig 7: Example Yield Boost with MELD Vaults)

### GENIUS LOAN

Following the idea of financial innovation, MELD will be offering a self-repaying loan. The user supplies their crypto and takes out a loan. If they choose the genius loan option, then the yield generated for the collateral will go directly to pay down the debt in the loan.

If a user starts a genius loan with \$100 of AVAX supplied at a 7% yield, and \$50 USD borrowed at 4% interest. After a year the collateral will have generated \$7 of yield, and the interest on the loan is \$2, so after the interest is paid, \$5 of the debt itself will be repaid by the yield. The next year the yield is the same, but the interest is slightly lower since \$5 of the debt has been paid down. After a bit less than 8.5 years, the whole loan is paid down from the yield alone, and the yield from the collateral will go back to compounding.

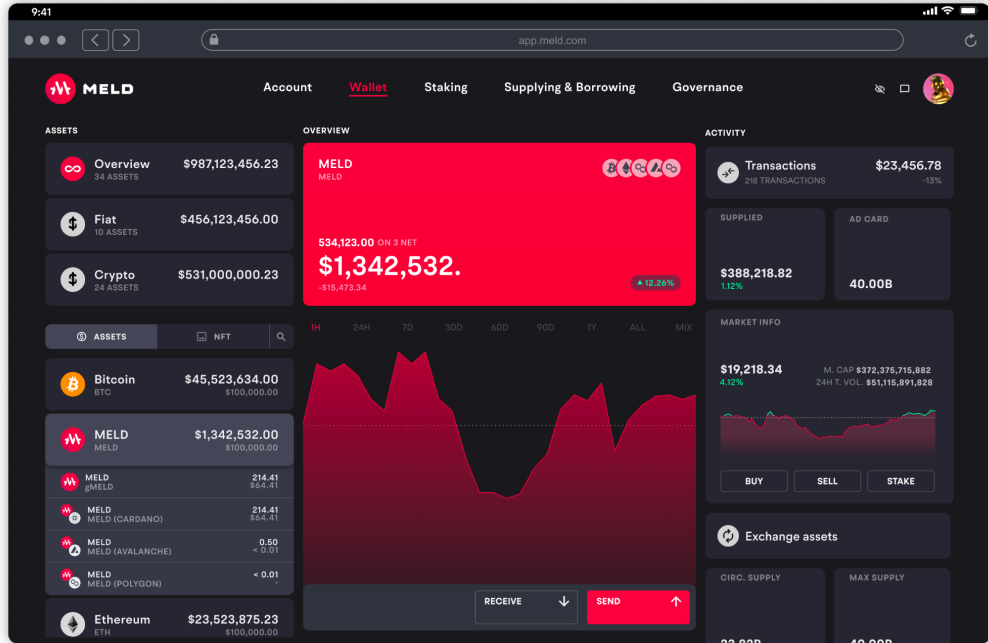
In the MELD Genius Loan, all of the yield generated by the collateral goes toward paying down the principal on the loan.

This product is able to offer users self-repaying loans by utilizing the supplied yield and yield boost to offset the cost of the loan. This type of structure is unique to the financial industry and it is only possible through the decentralized nature of DeFi.

## MELDapp

### Web Wallet

MELDapp's Wallet is a cross-chain, non-custodial wallet that provides users with a secure and convenient way to store, manage, and transact with their digital assets. The MELDapp is built with a user-centric design philosophy, ensuring that the platform is easy to navigate and use for both novice and experienced users. With its cross-chain capabilities, the MELD Wallet enables users to manage assets from different blockchains, including Cardano, Ethereum, MELD, and Avalanche. This allows users to take full advantage of the DeFi ecosystem without having to switch between multiple wallets.

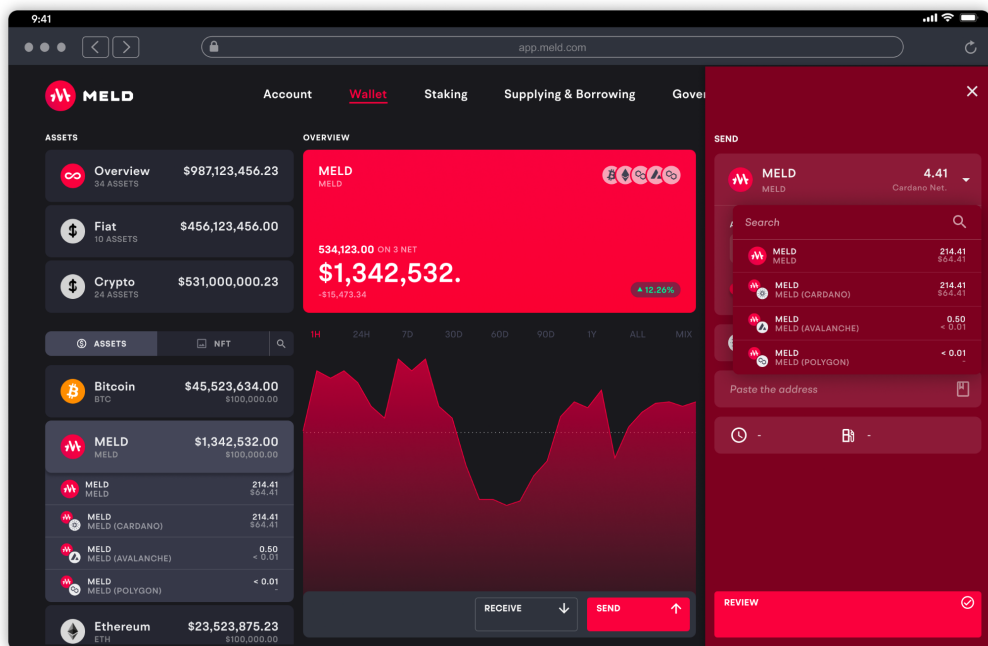


(Fig. 8 - MELDapp main wallet interface)

### CROSS-CHAIN NATIVE

MELDapp's integrated bridging technology allows for seamless transfers of assets between different blockchains within the wallet. This ensures a frictionless user experience, allowing users to take full advantage of the DeFi ecosystem without the need for multiple wallets.

The MELD Wallet offers a range of investment options through innovative integrations with traditional markets. Staking options are also shown from within the wallet for different blockchains like Cardano, Avalanche, and Ethereum, allowing users to earn passive income on their digital assets.



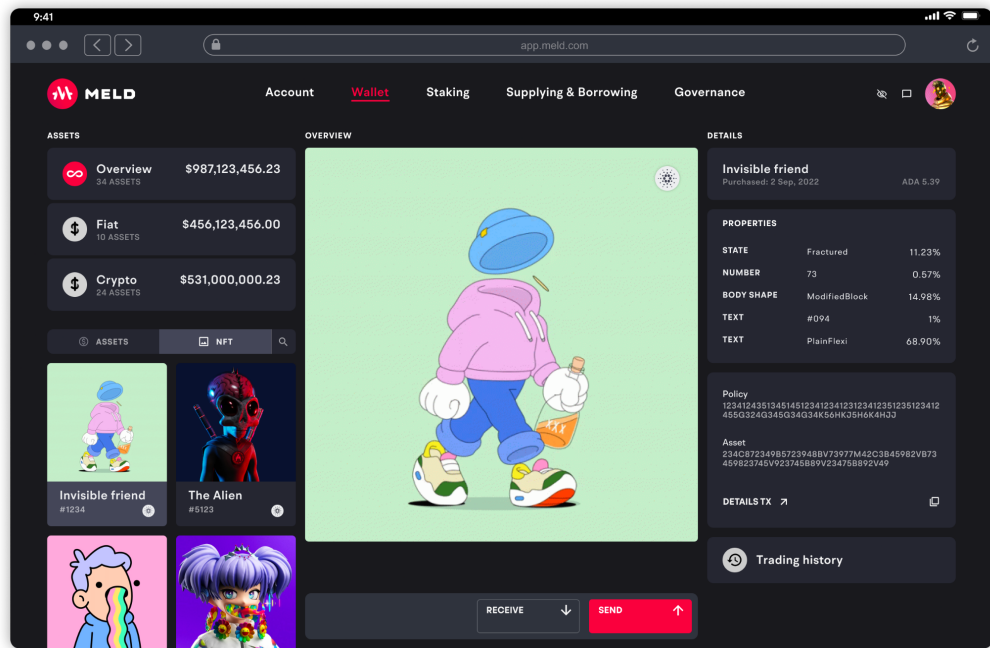
(Fig. 9 - MELDapp cross chain send interface)



## ALL YOUR TOKENS & NFTs

The MELDapp is built to be able to aggregate all of a user's tokens and give them an easy and efficient way to generate yield. The MELDapp is not intended to replace Metamask, Nami, or any other browser extension-based wallets. You can connect your extension-based wallet to the MELDapp like any other dApp.

We currently support Metamask for EVM-based tokens as well as Nami and Eternal for Cardano tokens. The MELDapp will continue to add support for more web3 wallets in the future as the application evolves.



(Fig. 10 - MELDapp NFT interface)

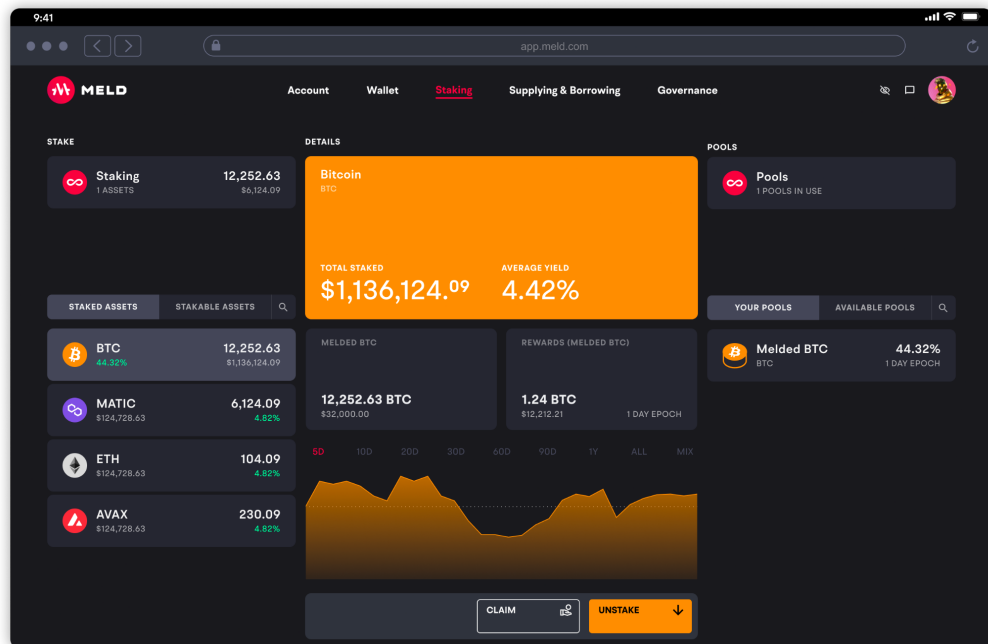
## FIAT FRIENDLY

The MELDapp will evolve to support MELD.FI and functionality between fiat and crypto. It will have fiat conversion options, allowing users to easily buy, sell, and exchange their digital assets for fiat currencies. This will help bridge the gap between TradFi and the world of DeFi, making it easier for users to enter and exit the market. The goal of supporting fiat beyond on/off ramping is to make it very easy to use fiat to stake into yielding instruments. As the MELD ecosystem expands we will be providing several different types of fiat yielding opportunities. A user will be able to move fiat into a stablecoin-yielding position in a single click.





## STAKING

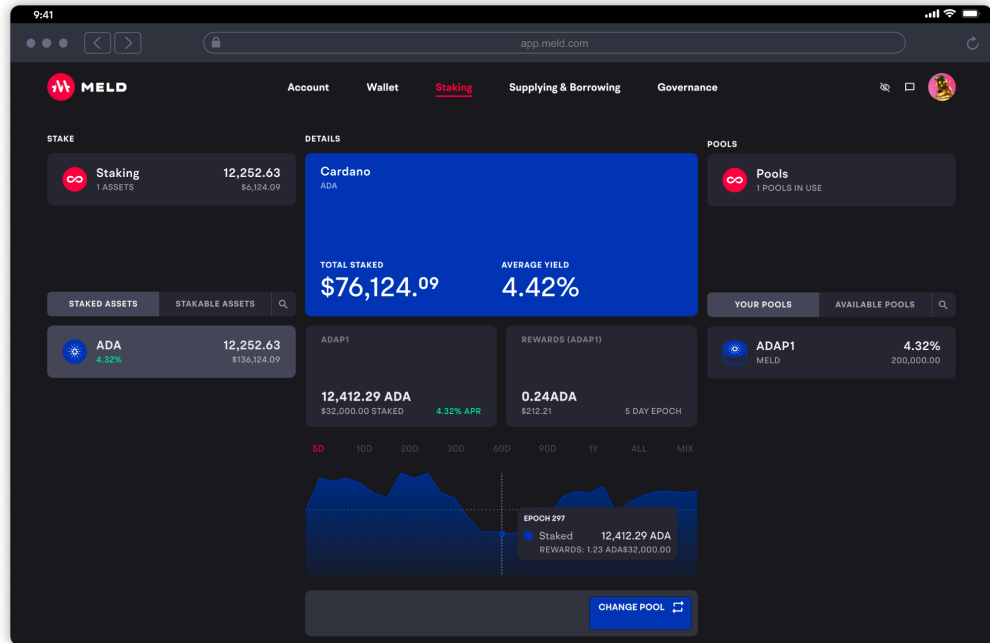


(Fig. 11 – MELDapp BTC structured product staking)

Staking is a cornerstone of the MELDapp, offering users a variety of staking options from native PoS staking for assets such as MELD, ETH, ADA, and AVAX along with staking opportunities in structured products and a limited selection of pool-based staking options. Users will be able to stake in an effortless manner in the MELDapp ensuring a continuous yield generation to foster a more capital-efficient solution.

Our goal is to provide a diverse range of yielding opportunities within the MELDapp, ensuring a minimum of two yielding options for all "main" tokens. This comprehensive selection encompasses liquid staking options for prominent tokens like BTC and ETH, among others. The first yielding option focuses on low-risk strategies such as native PoS staking, while the second option caters to those seeking higher-risk, high-yield opportunities, including structured products or farming strategies. By offering this breadth of staking choices, we aim to accommodate a wide spectrum of user preferences and investment goals.

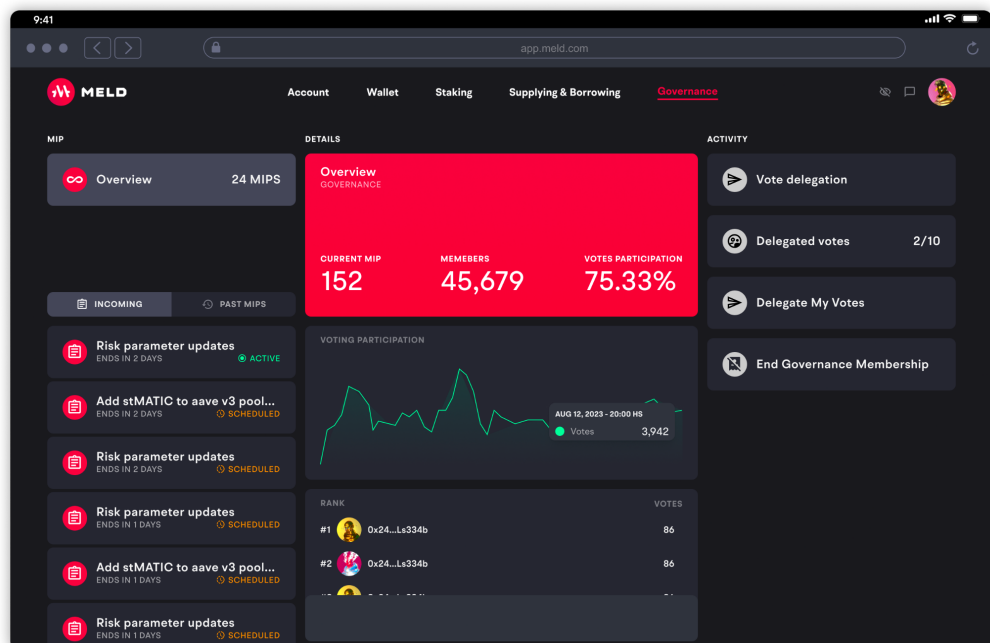
The MELD DAO will review all of the yielding options made available in the MELDapp and issue a report about the security, risks, and ratings for each solution. As with any form of yield, it is important to acknowledge the inherent risks involved. In our commitment to transparency, we will diligently provide users with comprehensive information, enabling them to make well-informed decisions and be fully aware of the potential risks involved.



(Fig. 12 - MELDapp native PoS staking)

## GOVERNANCE & VOTING

The primary interface into the MELD DAO is the MELDapp. Users will be able to review all Meld Improvement Proposals (MIPs). Users that choose to join the DAO will be able to vote on MIPs as well as make proposals. MELD will transition to a full DAO-governed protocol over a 3-year period slowly bringing more self-governance into the DAO and DAO users. For further details, please refer to the MELD DAO section.



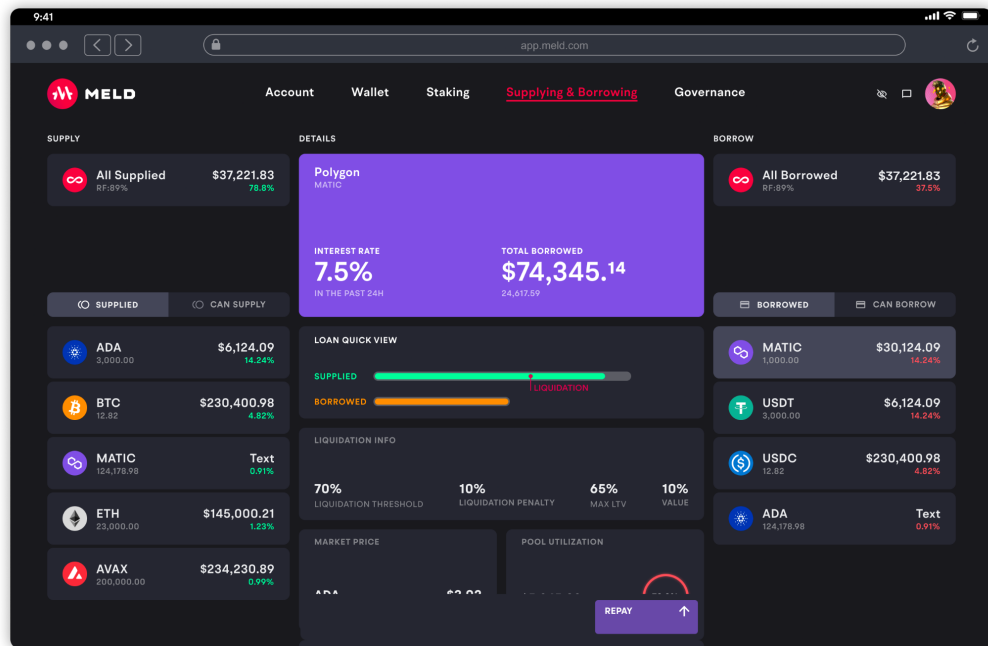
(Fig. 13 - MELDapp DAO voting interface)



## LENDING & BORROWING

MELD lending and borrowing will be available through the MELDapp as well as via API so that other projects can integrate MELD protocol functionality as needed. The MELDapp will let users supply assets and then borrow against those assets.

All assets will be visible in the dApp and unlike other lending and borrowing protocols, all of a user's assets will be cumulatively counted and can be borrowed against. Meaning that a user could use BTC and ETH and MELD together, think a basket of assets, as collateral for a loan.

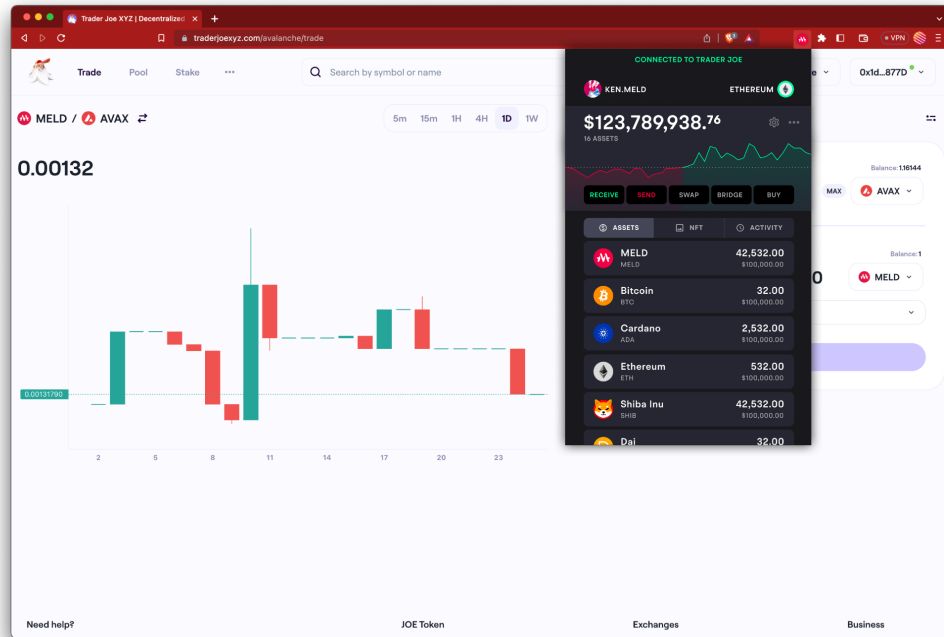


(Fig. 14 - MELDapp lending & borrowing interface)

Each collateralized debt position (CDP) is visualized based on a 2-line chart. The top line represents the supplied assets that are held as collateral in the CDP and the liquidation point based on the risk models. Second, is the line below the collateral, which shows the borrowed amount in CDP. Each line can change color depending on the health of the CDP and the change in the price of collateral and the borrowed asset. If the collateral value goes down, then the supplied line will go from green to blue, orange, then red. When the line turns red then the CDP is in danger of being liquidated. This color scheme is the same for the borrowed asset, if the value of the borrowed asset goes down, then the line will become more green. If the value of the asset goes up, then the line will go toward blue, then orange then red.

## MULTI-SIG & BROWSER EXTENSION

For MELD treasury management we have developed a Cardano multi-sig wallet. This wallet will be released as a browser extension available to teams and projects wishing to have multi-sig support for their treasury. The multi-sig wallet will function as a commercial product while maintaining its non-custodial nature. Users opting to leverage the multi-sig wallet will incur a nominal fee as compensation for using the multi-sig functionality.



(Fig. 15 - MELDapp browser extension)

After the multi-sig wallet is released, MELD will work on expanding the functionality in order to include full MELDapp support to a browser extension wallet. The wallet will be directly tied to the MELDapp account.

The browser extension will seamlessly integrate with the MELDapp, serving as an extension that can be utilized within dApps operating on the chains supported by MELD.

## Cross-Chain Bridging

MELD embraces the belief that the future of finance lies within DeFi, and, in turn, the future of DeFi and the broader crypto space is predicated on dismantling the barriers that exist among different blockchains. This dismantling of barriers helps the ecosystem in several ways. First, it allows liquidity to flow to where it can be most useful, and second, it helps new blockchains to get access to liquidity fast and easier, facilitating innovation. Finally, it allows users to aggregate their investments more efficiently. To do this, you need to bridge assets across multiple blockchains. The MELD protocol will make this a reality by allowing users to access multiple blockchains through the MELDapp. MELD will do this by integrating with a third-party service provider that specializes in blockchain bridging technology. With the MELDapp, users will be able to send, receive, and stake assets on all supported chains through integrated bridging technology.

Initially, the MELD protocol will support Bitcoin, Ethereum, Cardano, Avalanche, Polygon, BNB Chain, and MELD blockchains. This will be achieved through a combination of cross-chain technology and liquidity pools. Through this bridging functionality, MELD users will be able to leverage the strengths of multiple blockchains to access a range of financial products and services.

Bridging is an essential part of the MELD protocol's mission to provide access to financial services to people worldwide. As crypto adoption increases and each blockchain's liquidity grows, the ability to access multiple blockchains becomes increasingly important. The MELD protocol understands this need and has taken steps to ensure that users can access the blockchain of their choice, all through a single platform.



As MELD continues to evolve, we plan to expand the number of supported blockchains and expand our bridging partners to provide seamless access to a range of decentralized financial products and services. We believe that bridging technology is critical to the future of DeFi, and we are committed to being at the forefront of this technology.

The MELD token is also a natively cross-chain asset. MELD maintains the MELD token contracts on all supported blockchains. More details about the token, minting, burning, and bridging are in the MELD Token section.

## NFT's

MELD recognizes the significance of NFTs as a pivotal technology in the crypto sphere. We leverage NFTs for two primary reasons. Firstly, their distinctive nature as singular, unique assets enables us to unlock specific functionalities that cater to individual users or entities. Secondly, NFTs have gained prominence as entertainment-oriented assets within the industry. We will harness their potential for community-building initiatives and engaging marketing activities.

MELD introduces a unique integration of NFTs within its ecosystem, offering users additional utility and benefits through the "[Bank Managers](#)" and "[Diamond Hands](#)" NFT series. These NFTs serve to enhance user experience and interaction with the MELD protocol, providing them with exclusive access and incentives.

Bank Managers NFTs are available to all ISPO participants and offer two main utilities within the protocol. Firstly, they can be used to reduce loan interest rates when creating a loan. By holding a Bank Manager NFT in the user's wallet during loan creation, they can receive a 0.3% reduction in interest rate, with the NFT being locked as a form of collateral until the loan is closed. These NFTs can also increase yields on variable staking in the MELD pool by 0.1%. Users can add or revoke their Bank Manager NFTs from the pool at any time, with no lockup, and the yield change will take effect after the epoch snapshot. MELD will release 10 special "Golden Bank Manager" NFTs that grant owners a full 1% discount on their loan interest rate.

*Bank Managers can be purchased on a secondary market.*

Below is a list of current and planned NFTs and their functionality within the MELD ecosystem.

NFT Name	Diamond Hands	Bank Managers	miNFT	SupplyNFT	borrowNFT	govNFT
Quantity	4676	45,000	Unlimited	Unlimited	Unlimited	Unlimited
Use	MELD.FI	Lending & Borrowing	Lending & Borrowing fiat	Lending & Borrowing	Lending & Borrowing	DAO
Values	Free MELD.FI account	0.3% discount on loan + 0.3% boost on supply	Encrypted data about KYC verification status.	Details on current supply assets and yield. Ability to withdraw LP tokens.	Details on current debt and interest.	Verification you have voting rights.
Dynamic	No	No	Yes	Yes	Yes	No
Soulbound	No	No	Yes	No	No	Yes

Diamond Hands NFTs are rewarded for users who delegated their ADA to MELD ISPO stake pools for 30 or more epochs. These NFTs offer utility on the fiat side of MELD's services, such as early access to the mobile app and its features, bank accounts, and fee



exemptions for the MELD crypto debit card. Holders of Diamond Hands NFTs will not be required to lock up MELD tokens to use these services. Furthermore, additional benefits and discounts for the mobile app and bank will be unveiled soon, further enhancing the value proposition of these NFTs within the MELD ecosystem.

*Diamond Hands can be purchased on a [secondary market](#).*

## miNFT

MELD's identity NFT (miNFT) solution is a decentralized way for individuals and businesses to verify their identity through a non-custodial wallet. The NFT stores encrypted results from a 10-class verification process covering a range of information from basic personal details to more complex financial and business-related information. Each class acts independently of the other along an ontological model, providing greater flexibility and control over the data and more flexible use. The NFT can be upgraded or downgraded based on new or changing information, time stamps, and duration periods that ensure the data is regularly confirmed for changes and updated when necessary. A small fee is required to receive the identity NFT initially, adding an additional layer of user wallet verification. Once the NFT is in the wallet, it cannot be transferred again, ensuring that the identity information remains secure.

The solution is intended to be used in the context of non-custodial wallets but no personal information can be accessed by other organizations. A request provides a serial response for questions like "Is this a person?" or "Is the address verified?". While not a standard, it can be used by many organizations to make it easier for users to connect their wallets to products that require some form of identity verification. Overall, the miNFT solution offers a promising approach to identity verification in a decentralized and flexible way.

### INTRODUCTION

Identity verification has become a critical concern in today's digital age, where individuals and businesses need to prove their identities to access financial services, online marketplaces, and other digital platforms. The traditional methods of identity verification, such as usernames and passwords, are increasingly vulnerable to cyberattacks, leading to identity theft and fraud. Non-custodial wallets have emerged as a popular way for individuals to store and manage their crypto assets without relying on centralized authorities. However, identity verification in the context of non-custodial wallets remains a challenge.

### BACKGROUND

Non-custodial wallets are digital wallets that allow individuals to store and manage their crypto assets without relying on centralized authorities such as banks or financial institutions. Non-custodial wallets are popular among crypto enthusiasts because they offer greater security and privacy than custodial wallets. However, non-custodial wallets also present challenges when it comes to identity verification. Traditional methods of identity verification, such as usernames and passwords, are vulnerable to cyberattacks, and there is a need for a more secure and decentralized approach to identity verification in the context of non-custodial wallets.

The miNFT solution aims to address these challenges by creating an NFT that acts as a reference document for an individual's identity connected to their non-custodial wallet. The miNFT stores encrypted results from a verification process in 10 classes, covering a range of information from basic personal details to more complex financial and business-related information. Each class acts independently of the other along an ontological model, providing greater flexibility and control over the data being shared.



## **VERIFICATION VS IDENTIFICATION**

The primary role of the miNFT is to provide verification that a specific state has been achieved. In most cases, no information beyond a yes or no is needed to interact with the miNFT. In circumstances where MELD.FI needs specific information, then the user will need to approve this on a case-by-case basis. For example, in many scenarios, only class 1 verification is necessary, confirming that the wallet belongs to a human or that the wallet holder is above 18 years of age. In such cases, MELD may seek a simple confirmation or denial response from the miNFT, such as "Is the user an accredited investor?". This verification request does not delve into the user's net worth or income. Its sole purpose is to ensure the minimal verification of their eligibility for a particular context.

## **ONLY NECESSARY INFORMATION**

The miNFT is a user-centered product, it is designed with the needs of the user at its core, not the needs of the protocol consuming the miNFT. You will notice that there is no information in the miNFT about sex or religion or race and that nationality is separated from tax residency. This is intended to produce a product that leads to the least amount of bias we can achieve, while still fulfilling the needs of the protocol.

To achieve this, the miNFT has been divided up into classes that are not hierarchical. When a verification request is initiated, it will solely focus on the specific information required for the transaction at hand. For instance, if a protocol needs to verify whether a user is an accredited investor, the request will yield a simple "yes" or "no" response. No additional details regarding the user's age, address, tax residency, or business will be disclosed. The verification process strictly adheres to the minimum necessary to satisfy regulatory requirements.

## **COLLABORATION**

miNFTs are developed specifically for the MELD ecosystem and our needs, those needs have proven to be common for other protocols and organizations. During the development of the miNFT, we engaged in extensive discussions with various projects, including experts in digital identity and financial institutions. These conversations have resulted in valuable partnerships and generated interest from others who wish to support, issue, and utilize the miNFT concept. It's important to note that the miNFT is not solely a product within MELD; rather, it emerged from a specific need that we aimed to address. As the miNFT's scope expands, our hope is that other entities will embrace and build upon its core principles and functionalities.



## CLASSES

The miNFT solution offers a comprehensive approach to identity verification by storing encrypted results from a 14-class verification process. Each class covers different types of information, ranging from basic personal details to sophisticated verification of shareholdings or financial licensing.

Class	Short description	Purpose	How to verify	Re-verification time
1	Human	Validation that this is an actual person	Solving a captcha	6m
2	Personal information	Date of birth, Full Name, ID No. / Passport No, Nationality	Provide and verify passport / ID or similar document.	1y
3	Age	To verify the user age.	Any form of valid ID such as passport.	5y
4	Phone number	Verify the phone number of the person	SMS verification.	1y
5	Address	Verify the address of the person	Provide and verify Proof of address.	1y
6	Email	Verify the Email of the person	Email verification	6m
7	Is a business	Business name, company name, incorporation date, legal form and country of registration	Provide and verify proof of incorporation document	6m
8	Business Structure	Understanding of the business, what they do, and information about important people in that business.	Provide and verify Article of Association, extract from register with director & shareholder information and UBOs	1y
9	UBO/Significant shareholder status	List what business the person is a UBO in or understand if the person is a shareholder.	Provide company registries and/or trustee documents for verifications. Provide and verify companies where the person holds shares.	1y
10	Tax residency	Where taxes are being paid	Provide and verify (i.e. Document from tax authority)	1y
11	Advanced Identity information	PEP / Police / other	The person himself provides information if he had in the past X years had any issues with police and if the person is a PEP. Verified with PEP + adverse media screening platform.	3y
12	Accredited investor	Accredited investor status	Provide and verify a source of wealth of over 1,000,000 USD or income of over 200,000 USD for the past 2 years.	1y
13	Sophisticated investor	Professional/licensed investor type	Provide and verify the investor license.	1y
14	Financial license for a business.	This is for a VASP, Bank License, Fund license etc.	Provide government docs and license IDs that can be verified.	1y





### **CLASS 1: HUMAN**

This class is the first step in verifying an individual's identity in the miNFT solution. The purpose of this class is to validate that the user is an actual person. This is done by solving a captcha or a method to capture and verify a version via video. There is no data added in this class except for a binary switch verifying that is a person or it's not verified. The verification process for this class is relatively simple, and the re-verification time for this class is 6 months. This class is intended to allow a person to remain anonymous, while still demonstrating they are not a bot. Class 1 is required for all other classes.

### **CLASS 2: PERSONAL INFORMATION**

This class is designed to provide and verify personal information such as date of birth, full name, and ID number/passport number. The purpose of this class is to ensure that the information provided by the user is accurate and verifiable. The user needs to provide and verify a passport/ID or similar document that has all of this information. The data added in this class includes more detailed personal information. The verification process for this class is more involved than class 1, and the re-verification time for this class is 1 year. Class 2 is required for other classes 7 and above to be achieved.

### **CLASS 3: AGE**

The purpose of this class is to verify the user's age, such as determining if they are above 18 years old. The data added in this class is the date of birth. The verification process for this class is automatic, and the re-verification time for this class is 5 years. Class 3 is required for class 7 and above.

### **CLASS 4: PHONE**

The purpose of this class is to verify the user's phone number. This is done through SMS verification. The data added in this class includes the user's phone number and associated data points. The verification process for this class is relatively simple, and the re-verification time for this class is 1 year.

### **CLASS 5: ADDRESS**

The purpose of this class is to verify the user's address. The user needs to provide and verify proof of address documents. The data added verifying this class includes the user's street address, city, country and postcode. The re-verification time for this class is 1 year. Class 5 is required for class 7 and above.

### **CLASS 6: EMAIL**

The purpose of this class is to verify the user's email. This is done through email verification. The data added in this class include the user's email and date of verification. The verification process for this class is relatively simple, and the re-verification time for this class is 6 months. Class 6 is linked to class 2 and can be used for more advanced classes.

### **CLASS 7: IS A BUSINESS**

The purpose of this class is to provide and verify business information, such as business name, company number, incorporation date, legal form, and country of registration. The user needs to provide and verify proof of incorporation documents. The verification process for this class is more involved and the re-verification time for this class is 6 months. Class 7 is linked to class 10, and can be used for more advanced classes.

### **CLASS 8: BUSINESS STRUCTURE**

The purpose of this class is to gain a better understanding of the business entity, including its operations, key personnel, and ownership structure. It involves collecting and verifying



information about the business's activities and the individuals involved in its management and ownership. The verification process for this class includes the submission and verification of business documents, government registries, signed and dated cap tables, and trustee contracts. The re-verification time for this class is 1 year. Class 8 requires classes 1, 2, 3, 4, and 5.

#### **CLASS 9: UBO/SIGNIFICANT SHAREHOLDER STATUS**

The primary objective of this class is to determine the Ultimate Beneficial Owner (UBO) status of an individual or ascertain their significant shareholder status within various businesses. The user is required to provide a list of businesses in which they hold UBO or significant shareholder positions. To validate this information, the user needs to provide company registries and/or trustee documents for verification purposes. The re-verification time for this class is 1 year.

#### **CLASS 10: TAX RESIDENCY**

The purpose of this level is to determine the tax jurisdiction where an individual pays their taxes. To complete this level, the user is required to provide documentation from the tax authority, such as a document confirming their tax residency status. The re-verification time for this class is 1 year. Class 10 is linked to classes 1, 2, 3, 5, and 7.

#### **CLASS 11: ADVANCED IDENTITY INFORMATION**

The purpose of this level is to gather additional comprehensive identity details about an individual, specifically relating to their potential association with Politically Exposed Persons (PEPs), criminal records, or other relevant factors. The re-verification time for this class is 3 years.

#### **CLASS 12: ACCREDITED INVESTOR**

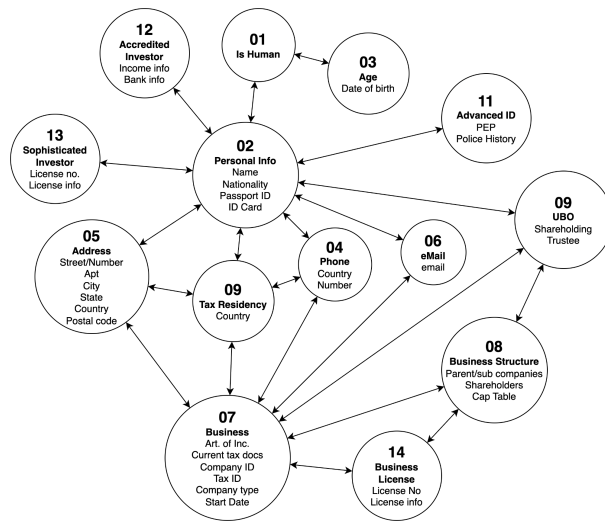
The purpose of this class is to verify the accredited investor status of the user. The user needs to provide and verify a source of wealth of over 1,000,000 USD or income of over 200,000 USD for the past 2 years. The data added in this class includes financial data points, such as net worth and income. The re-verification time for this class is 1 year.

#### **CLASS 13: SOPHISTICATED INVESTOR**

The purpose of this class is to verify the professional/licensed investor type of the user. The user needs to provide and verify the investor license such as a Series 7. The data added in this class includes professional and licensed investor-related data points. The verification process for this class includes copies of the license docs and license numbers. The re-verification time for this class is 1 year.

#### **CLASS 14: FINANCIAL LICENSE FOR A BUSINESS**

The purpose of this class is to verify if a business has a VASP, bank license, fund license, or similar license. The user needs to provide government documents and license IDs that can be verified. The data added in this class includes business-related data points, such as license type and license number. The re-verification time for this class is 1 year.



(Fig 16: miNFT Ontology)

## ONTOLOGICAL (NON-HIERARCHICAL) STRUCTURE

The data and verification of each class are only loosely associated with other classes. There are no hierarchical elements in the system with the exception of class 1 to verify that a real person is applying for KYC. The purpose of this is a user or verifier can specialize in a specific need, for example, accredited investor status and not have to deal with other classes they will not use.

This also allows the type of information in the miNFT to be a reflection of what the user wants to share, such as only class 1 and 3 allowing the user to retain anonymity while proving they are human and over the age of 18. In general, an ontological structure affords a very high degree of flexibility and freedom to limit data to an as-needed basis.

## USE CASES

The miNFT could be used to verify user identities for TradFi platforms, such as lending or trading platforms. The miNFT would contain information about the user's identity, such as their name, address, and age, which would help mitigate fraudulent activity and ensure compliance with regulations. In some jurisdictions, the purchase of securities requires class 12 accredited investor verification, while in other jurisdictions it is not required. This works in conjunction with nationality and tax jurisdiction.

## VOTING

The miNFT could be used to verify voter identities for online voting platforms. The miNFT would contain information about the eligibility of a voter. This eligibility can be defined by the organization taking the vote, such as aDAO. In some cases, a DAO might only want to know that a user is a human, while others might want to know if the user has a verified phone number.

## GAMING

The miNFT could be used to verify the age of gamers who want to access 18+ content and other age-restricted information. The miNFT would contain information not about the user's specific age or date of birth, but a verification that the user is above 18 years old. This preserves the user's privacy while protecting the provider.

## TOKENIZED ASSETS

The miNFT could be used to verify the eligibility of buyers and sellers in the purchase of a tokenized asset, such as real estate or bonds.



#### **HEALTHCARE**

The miNFT could be used to verify the identities of patients and healthcare professionals for telemedicine platforms. The miNFT would contain information about the user's identity, such as their name, address, and medical license, which would help ensure the accuracy and security of healthcare transactions.

#### **ONLINE MARKETPLACES**

The miNFT could be used to verify the eligibility of buyers and sellers on online marketplaces, such as eBay or Amazon. The miNFT would contain information about the user's identity, which would help prevent fraudulent activity and ensure compliance with regulations.

#### **SOCIAL MEDIA**

The miNFT could be used to verify the identities of users on social media platforms, such as Twitter or Facebook. The miNFT would contain information about the user's identity, such as their name and address, which would help prevent fraudulent activity and ensure the accuracy of user information.

#### **EDUCATION**

The miNFT could be used to verify the identities of students and faculty for online education platforms. The miNFT would contain information about the user's identity, such as their name and address, which would help ensure the accuracy and security of education transactions.

#### **EMPLOYMENT**

The miNFT could be used to verify the identities of job candidates for employment platforms. The miNFT would contain information about the user's identity, such as their name and address, which would help ensure the accuracy and security of employment transactions.

## **Metapools**

Metapools emerged from the opportunity to connect instruments from the real world of TradFi with novel concepts and funding mechanisms from DeFi. In particular, Metapools are infrastructure for the primary distribution of debt or security tokens on-chain. These include municipal bonds, commercial paper, properties, sovereign debt, factoring, mortgages, and more.

The debt instruments (bonds) market is four times larger than the equities market and is largely unregulated. Investors mainly get access via OTC and the space is almost exclusively for institutional investors. The yields in that market can be very high and navigating it can be extremely difficult. The debt market is completely out of the reach of retail investors and Metapools will fix this.

Metapools are a powerful DeFi innovation that brings real-world assets (RWA) into the crypto space. These pools provide liquidity for tokenized assets such as bonds, invoices, and other investment instruments. The assets are represented on the blockchain as ERC-20 tokens, which are easily tradable and moveable between different DeFi protocols.

Our motivation stems from the immense potential of real-world asset tokenization, a market projected to exceed 16 trillion dollars by 2030. On-chain securitization not only unlocks opportunities for a broader range of investors to access previously exclusive asset classes and instruments but also enhances traditional systems by enabling instant settlement and reducing transaction fees. We are driven by the transformative impact this



can have on the financial landscape, fostering greater inclusivity and efficiency for participants across the board.

Metapools will be a primary distribution infrastructure for tokenized assets, MELD will not be providing the tokenization service. Tokenization will be handled by any number of players in the space, and can be selected and vetted by the MELD DAO

To use a Metapool, a user puts stablecoins, such as USDC or USDT, into the pool and receives an LP token in return. The token represents the user's percentage ownership of the pool, which generates a yield through the underlying assets. Metapools offers a new way for investors to gain exposure to TradFi markets, and they are also beneficial for the issuers of tokenized assets who need liquidity for their holdings. The assets deposited in the pool are locked, which ensures that there is always sufficient collateral backing the tokens issued to investors.

One of the benefits of Metapools is that the tokens issued to users are tradeable on secondary markets. This means that investors have the flexibility to trade their holdings and exit their investments whenever they choose. By providing a new avenue for investors to access TradFi markets, Metapools are expected to bring significant growth to the DeFi ecosystem.

MELD's Metapools will be accessible via the MELDapp and API, making it easy for users to interact with the pools and participate in tokenized asset investments. As MELD continues to expand its offerings and partnerships with TradFi institutions, the pool of assets available for tokenization is expected to grow, providing even more opportunities for investors to diversify their portfolios and access new investment opportunities.

## ASSET TOKENIZATION

The concept of asset tokenization is already getting traction in the TradFi world. Institutions such as Blackrock are already recognizing its potential. In fact, on-chain tokenization is the logical development of asset fractionalization that has been in TradFi for a while. However, there are distinctive differences in the necessary steps involved in this process, as well as in the stakeholders and the securities that can benefit from it.

On one hand, we have a legacy system for asset fractionalization that complies with the following steps:

1. Fractionalize underlying asset
2. List each segment on an exchange
3. Each party owns small fractions
4. Process supervised by a centralized agency (REIT, ETF, MF)
5. Execute corporate actions

When it comes to tokenization, the approach is relying on the following set of stages:

1. Assemble the ecosystem
2. Register underlying asset & configure token
3. Set compliance rules
4. Store, manage & distribute tokens
5. Execute corporate actions

A core difference between fractionalization and tokenization is that only investment banks and AMCs have access to the former, while asset originators, protocol developers, private market exchanges, and other stakeholders can utilize the capabilities of the latter. Furthermore, tokenization allows for the development of the legacy financial infrastructure not only when it comes to public markets such as real estate, fixed income, and commodities, but also to private markets such as SME revenues, factoring, physical collectibles, digital assets, debt, investment funds, and bonds.



## ADVANTAGES OVER TRADFI

**Improves affordability** by enabling investments in divisible, fractional asset values of high-ticket instruments (e.g., hedge funds, alternatives).

**Enables borderless accessibility** by enabling the listing of previously illiquid assets (e.g., natural resources, land, vintage paintings), subject to local regulations in each jurisdiction, and enabling seamless trading in the secondary market.

**Unlocks liquidity** and enhances flexibility by enabling trading of assets before maturity (e.g., future earnings from agricultural land).

**Enforces immutable transparency and accountability** by offering a clear historical and current transaction record and immutable assignment/recording of ownership rights governed by smart contracts, in a shared ledger on distributed P2P network nodes (e.g., tokenization of government's infra projects as public ownership rights, improved tax recovery).

**Streamlines transaction efficiency** by a) enabling higher transaction speeds at a lower price, due to enhanced cost efficiency in asset transfer with the smart contract to allow for automation of exchange, b) reducing friction by ensuring a single KYC (if needed) suffices across all investments/platforms by linking users' wallets to the blockchain, c) gaining from asset servicing, i.e. the ability to distribute to token-holders without having to go via transfer agents/3rd party custodians and depositories over the life of the asset, and d) reducing the settlement times with blockchain overcoming DVP inefficiencies.

**Better price discovery** of illiquid assets as blockchain-enabled platforms disintermediate the process by helping reduce/lower 'rent-seeking' by intermediaries (e.g., auction houses, and asset management companies).

The infrastructure used in private markets consists of many disconnected and siloed service providers. Due to market fragmentation, analog and arduous processes have been implemented to enforce trust. This lack of infrastructure leads to poor asset transferability and little to no liquidity.

## TOKEN STANDARDS

### ERC-20 combined with ERC-734/735

ERC20 is an Ethereum token standard, widely used for the purpose of token issuance on various platforms. The peculiarity of this token type lies in the fact that it can represent value and serve such purposes as payments, value transfer, exchange, rewards or incentives, access to services and products, representing voting rights, etc. These tokens can hold both utility and security features, which opens a range of possible use cases for businesses, applications, and enterprises.

### ERC-3643

ERC-3643 is probably one of the best solutions for a token that can be programmed with compliance at its core, but also one that can inherit all the functionalities of an ERC20 token.

Previously known as the T-REX protocol. It is an open-source suite of smart contracts that enables the issuance, management, and transfer of permissioned tokens. \$28bn worth of assets have been tokenized through ERC-3643.

## POOLS

Metapools are broken into the issuing pool and yielding pools, which are divided up based on yield. The issuing pool is temporary and is used for the initial funding of the tokenized asset since most tokenized assets are divided up into different categories of debt, junior,



senior, mezzanine, etc. These highly jargon-heavy definitions are not investor or user-friendly, as such, we will divide up the tokens into these classes and provide clear descriptions of their character and potential risks.

The yield pools consist of a diverse range of tokenized assets, all sharing a common characteristic of offering a specific yield within a defined range. For example 1% pool (from 1% to 1.99% APY) and 18% pool (from 18% to 18.99% APY). As assets are added to the Metapools, the range of available yields will expand, offering a broader spectrum of investment opportunities. Our goal is to provide a range of Metapools and corresponding LP tokens from 1% to 50% APY.

## **USERS**

Liquidity providers are looking for a stable and diversified yield drawn from real-world assets. These liquidity providers have in the past focused on capital contributions toward a senior or junior tranche of borrowing. Metapools removes this highly technical and institutional perspective and replaces it with pools of assets grouped together by yield and risk. Users supply stablecoins and receive LP tokens that accrue interest from the debt markets.

## **DISTRIBUTION**

APY is accrued in the specific Metapool, such as a 6% pool (yielding between 6.00% and 6.99%) on a timely basis, that is predefined and agreed on. LP tokens have a locked period for the duration of the debt instrument but the LP Tokens can be traded on the secondary market while getting Oracle data for price discovery from the specific Metapool.

## **BORROWERS**

The borrowers in the Metapools ecosystem are businesses that seek funds in order to finance their real-world operations. To participate, businesses can submit a proposal to the MELD DAO for evaluation and rating. If the proposal is deemed successful, they are granted access to the protocol. User access to the protocol is open to all, while borrowers are required to meet a set of standards established by the DAO and undergo a due diligence process to become eligible.

## **YIELD DISTRIBUTION**

A borrower should pay interest and be compliant with the repayment schedule that was determined in the loan terms. In the event that a borrower is unable to make timely payments, a grace period will be offered. However, there is a possibility of default if the payments are not ultimately made.

## **DAO STRUCTURE**

When it comes to onboarding borrowers with a pool to our infrastructure, thorough inspection and due diligence are of utmost importance. Therefore, we have implemented a mechanism to filter out companies that do not comply with the necessary requirements to safeguard investors' capital. Unlike other protocols that rely on randomly selected auditors, our approach involves the DAO conducting the screening process. This ensures strict compliance and due diligence for all entities seeking to establish a borrowing pool, minimizing the risk of fraudulent or illicit activities.

## **GOVERNANCE**

The MELDed Metapools protocol is initially launched as a centralized entity, with the intention of transitioning to a fully decentralized model in the future. This approach is



taken to ensure ongoing compliance with regulatory requirements. Once the protocol becomes community-driven and evolves into a DAO, its primary focus will be on maintenance and parameter adjustments through a democratic voting system. This includes tasks such as adjusting protocol parameters, upgrading smart contracts, and managing Unique Entity Check providers. By involving the community in decision-making, the protocol aims to foster transparency, inclusivity, and adaptability to meet the evolving needs of its users.

## MELDed Units

MELD offers DeFi infrastructure for wrapping assets (Units) from the physical world to various blockchain networks (Cardano, Avalanche, ETH). The initial scope of the assets will include GLDu, USu, EUu, CHu, and JPu followed by more assets and currencies from various jurisdictions.

MELD strives to be an all-inclusive and collaborative protocol, working across the DeFi ecosystem. MELD wants to participate in these communities as well and unlock their enormous value.

Each MELD Unit follows a consistent naming convention, consisting of the asset name followed by a lowercase 'u' to represent Unit. For instance, if the asset is Gold, it would be denoted as GLD when brought onto the blockchain, and its corresponding MELD Unit would be named GLDu. These MELD Units are designed to be fully backed by their physical counterparts at a 1:1 ratio (specific 1:1 details can be found below). Despite their backing, MELD Units possess all the features and functionality of crypto, enabling them to be traded, utilized in liquidity pools, and utilized in lending and borrowing protocols.

The MELD DAO will be responsible for the management of MELD Units, overseeing their minting and burning processes. When transferring MELD Units, the associated physical assets will be securely locked within MELD.FI or held by an entity under the control of the MELD Foundation, such as a gold vault. Simultaneously, the crypto equivalents of these assets will be minted onto the blockchain, resulting in the creation of MELD Units.

In the case of gold, MELD Units are generated by the MELD protocol, which sends physical gold or fiat dollars to the MELD DAO. Importantly, MELD Units are fully compatible and can be utilized across multiple networks. Should users wish to redeem their MELD Units for their physical counterparts, they can do so at any time through the MELD DAO, with the redemption process facilitated by MELD Digital.



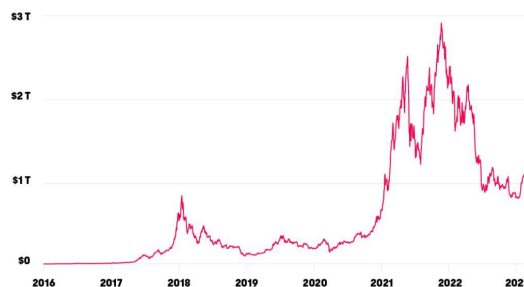


## The Market

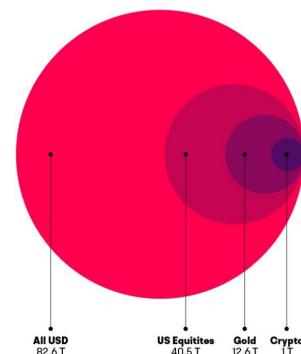
The target customer for the MELD protocol includes any crypto user regardless of size and sophistication. The crypto market is growing fast, adoption is happening across all demographics, and some of the fastest is among the youngest (under 18). The growth is phenomenal, but the innovation and sophistication are equally stellar. The tools available to this market have historically only been for the very few and privileged, but are now available for ordinary people, globally, 24 hours a day, seven days a week.

- 480 million crypto users worldwide<sup>19</sup>
- 56% of crypto investors never use their tokens to pay for goods or services<sup>20</sup>
- Almost 20% of crypto users younger than 18<sup>20</sup>
- 30% of crypto investors are between 25 and 34<sup>20</sup>
- More than half of crypto investors have higher education (BS, MS, Ph.D.)<sup>20</sup>
- Millennials trust Bitcoin<sup>20</sup>
- Almost 20% of crypto investors hold \$100,000 worth of BTC or more<sup>20</sup>
- 2021 survey of over 60,000 users worldwide shows 97% confidence in crypto<sup>21</sup>
- More than 90% of users see themselves as investors<sup>20</sup>
- Most crypto investors are HODLers<sup>20</sup>

### MARKET CAP



### RELATIVE SIZE

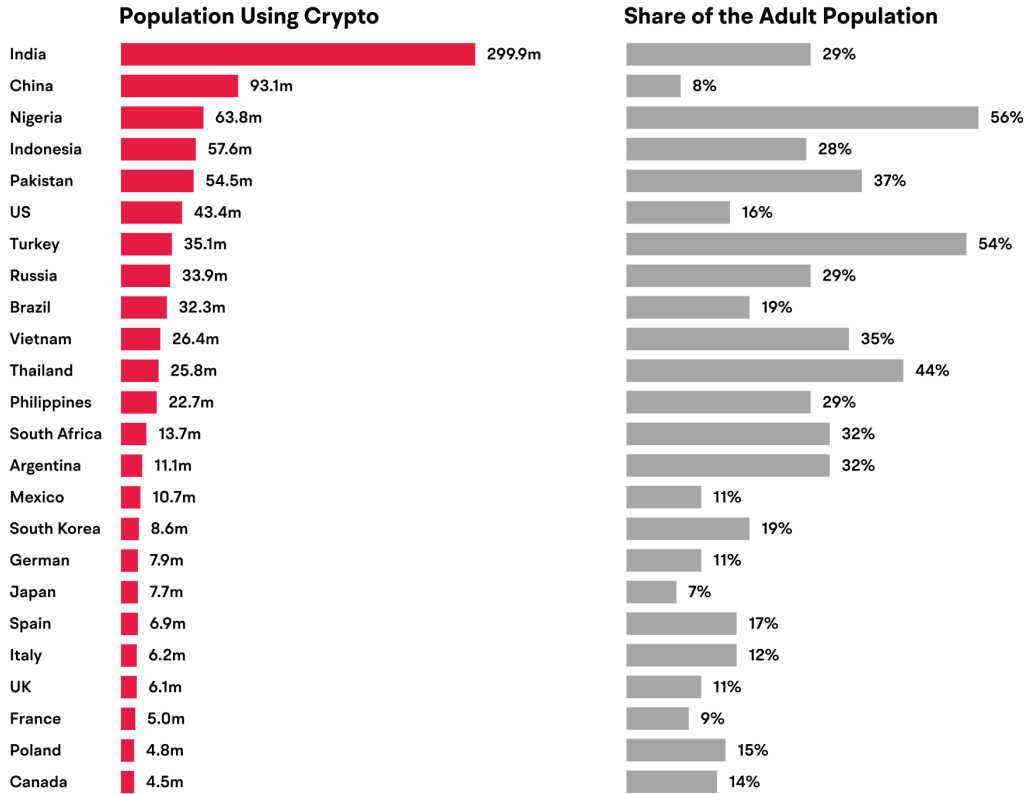


The total crypto market capitalization peaked at \$2.6 trillion<sup>22</sup> on May 7, 2021, and is expected to more than quadruple by 2025<sup>23</sup> as a result of blockchain integration into various industries.

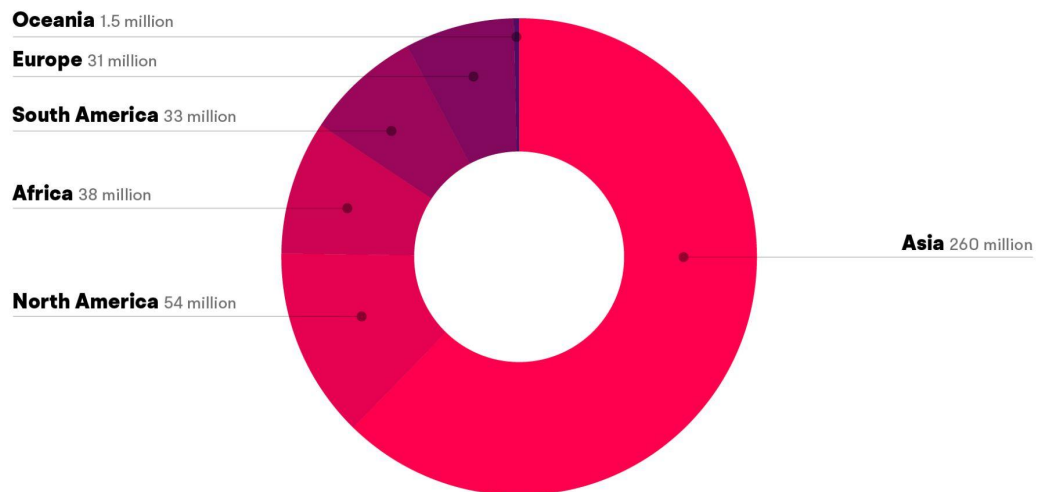


## Crypto Traders by Country<sup>24</sup>

The population that regularly make crypto transactions is in the region of 900 million users.

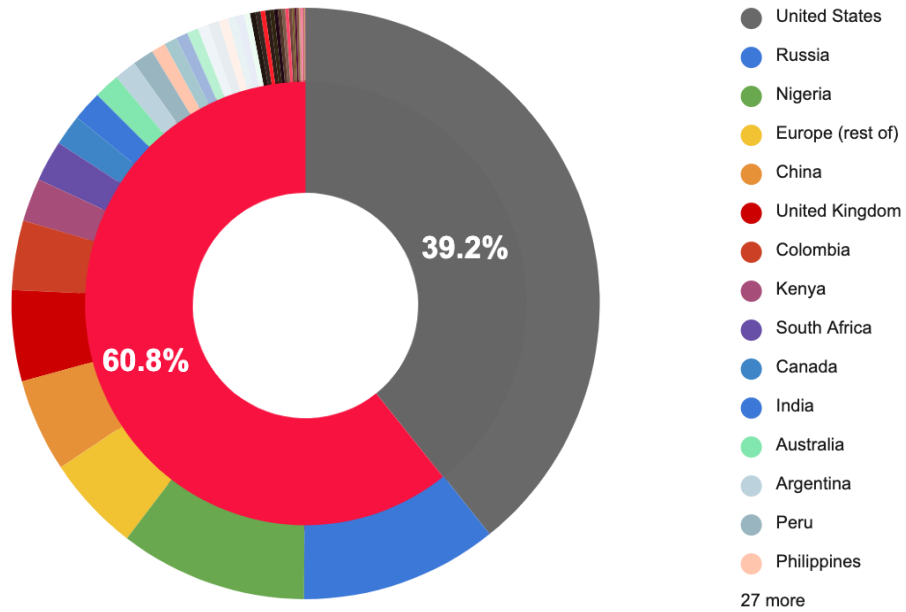


## Crypto Ownership by % of Population





## Bitcoin Traded by USD Value



The graph above shows the amount of Bitcoin traders by USD value allocated to specific countries. As you can see, 39.2% of trades occur within the United States, and 60.8% occur outside.

We are initially targeting our products towards 60.8% of international, non-US-based users.



## Our Users

Representing a broad swath of society, our users are anyone actively exposed to crypto ranging from a Nigerian shopkeeper that has .05 BTC to a successful crypto business with more than \$100m in assets to a traditional institution looking to create new revenue centers. Everyone needs fiat to live, work and play, and crypto holders need it even more because they typically invest a great deal in crypto assets at the expense of fiat liquidity.

### Primary

Our main focus at MELD is to provide innovative borrowing solutions to users looking to access the value locked within their crypto. Borrowers include any holder of crypto greater than \$50 USD.

There are over 50 million active crypto traders<sup>25</sup> around the world. Not only is the number growing, but the demographic is unique in the use of financial products. About 20% of the investors are under 18 years old, and the fastest-growing segment is women. Just in BTC, more than 25 million addresses are economically active wallets held by private individuals. Millennials and younger are more inclined to trust crypto than fiat currency. We see a general shift toward digital and more specifically decentralized crypto as faith in classical sovereign fiat fades.

### Crypto Investors

Cryptocurrencies and their use in the financial markets throughout DeFi have seen market adoption expand at an ever-increasing pace since the summer of 2020. The appreciation of crypto assets over the past few years has resulted in investors gaining a significant amount of value, and they see this rise continuing over the next 5 years. As a result, crypto investors are unwilling to spend or sell their crypto positions.

This attitude in the market creates a need for investors to unlock some of the value in their investments without either triggering a tax event or liquidating their positions. Crypto-based loans and credit lines offer an efficient and cost-effective way to realize their gains in fiat to use in everyday life events like buying a house or getting married.

With MELD products, investors worldwide can enjoy the benefits of their investment now with an open and safe protocol in the DeFi space.

### Venture Capitalists

Crypto miners are key actors in the crypto ecosystem. Miners validate transactions on various blockchains such as Bitcoin and Ethereum to earn rewards for their service. As a result, a great deal of wealth is accumulating among miners. Like investors, miners are unwilling to spend their crypto due to their bullish attitude toward the market.

While miners also have a need for disposable fiat, currently they also have a need to cover operations and expansion of their mining operations through CAPEX and OPEX costs. With a MELD loan or line of credit, miners are free to operate and expand as needed.

### Crypto Businesses

Crypto businesses need fiat capital to be able to operate and handle day-to-day expenses. These businesses typically have large balances in crypto, and MELD provides a bridge to realize their assets in fiat for OPEX and CAPEX expenses or investments.



After the launch of MELD and the implementation of crypto-backed fiat loans, crypto businesses will be able to take their crypto balances held within their reserves, deposit them on the MELDapp, and borrow against them. This allows the project owner exposure to the price appreciation for crypto assets on deposit while still gaining access to fiat to finance their needs.

## Crypto Exchanges

Centralized crypto exchanges (CEXs) are a large part of the crypto ecosystem. As of 2020, CEXs are the most widespread mode of operation for crypto exchanges. The speed and cost-efficiency of processing transactions by a single point of authority make them convenient for users to perform token swaps.

By design, MELD's instant crypto loan provides partnering CEXs with added liquidity. CEXs can utilize the additional liquidity to support their margin lending activities, enabling them to offer their users higher capital efficiencies while simultaneously providing MELD fiat lenders a more stable interest return.

## Secondary

MELD creates fiat-lending liquidity, providing investment opportunities with safe and attractive returns for individuals, institutions, as well as B2B customers. The fiat provided by lenders fulfills the borrower's loan position. This means fulfilling the utilization of a line of credit purchased by a user or fulfilling a wire transfer executed by a user creating a crypto-backed loan. The LPs will have a variety of terms to fulfill for each borrower. The most important term is the interest rate for the duration of the loan. The interest rate will be dependent on the overall availability of liquidity and the demand to borrow. We will be expanding our client base in the next few years towards centralized institutions that have a lot of capital and are looking for a safe way to earn a solid interest return on their fiat. These include, but are not limited to:

## FinTech

Financial technology (FinTech) aims to compete with TradFi methods in the delivery of financial services. FinTech has created an emerging industry that uses technology to improve activities in finance.

Companies such as Square, Paypal, and Paysafe have innovative FinTech solutions that disrupt the TradFi landscape. These companies are now integrating crypto solutions into their business plans and some have even started buying Bitcoin and other crypto for their balance sheets.<sup>26</sup>

MELD can provide FinTech firms with the ability to operate in the crypto space and leverage their assets to pay for operations and capital expenses. We provide these types of services so that traditional companies can more actively focus on their core business and take advantage of the capital efficiency MELD offers.

## Pension Funds

Pension funds buy assets with contributions for the exclusive purpose of financing pension plan benefits. The pension fund is a pool of assets forming an independent legal entity.<sup>27</sup>

Preliminary data for 2019 show that pension funds held USD 32.3 trillion in the OECD area and USD 0.7 trillion in 29 other reporting jurisdictions.<sup>28</sup> Pension funds can become liquidity providers with their managed assets safely and securely to earn a greater yield than any bond on the market today.



## Institutional Investors

An institutional investor is an entity that pools money from clients, or partners, to purchase investment assets or originate loans. Institutional investors include banks, credit unions, insurance companies, REITs, investment advisors, endowments, and mutual funds. These include operating companies that invest excess capital in various types of assets. According to the OECD Institutional Investors Statistics 2020, \$22 trillion USD is situated in institutional investor accounts within the United States alone.<sup>30</sup>

MELD can offer these investors further capital efficiency and an attractive interest return from fiat liquidity, providing a solution for excess capital. Institutional investors can utilize MELD's protocol to generate a yield from unproductive liquidity held on balance sheets.

## Hedge Funds

Estimates show that the total AuM (assets under management) of crypto hedge funds increased in 2019 to over \$2 billion USD from \$1 billion USD the previous year.<sup>31</sup> Hedge funds that have invested capital under management in crypto assets are also direct beneficiaries of MELD's Instant Crypto-backed Loans as well as candidates for becoming a liquidity provider of fiat for borrowers.

Depending on market conditions and strategies, hedge funds may attain a large fiat position for assorted reasons and hold it for an extended period. In these cases, hedge fund managers can use MELD's fiat liquidity pool to earn an interest return on their unproductive fiat.

Hedge funds can deposit their crypto assets to the MELD protocol through the MELDapp or API where they are able to leverage the locked value in crypto assets giving them greater flexibility to structure their portfolios.

## Long-Term

### Banking The Unbanked

One of the reasons we are building the MELD protocol is to expand our market to a population that currently has no access to trustworthy financial instruments such as bank accounts or more sophisticated products like crypto-backed loans. This population is the "unbanked" and they comprise approximately 2 billion people. The "unbanked" is a term used to describe those who do not have access to a bank account. In addition, this population may not have access to other financial services such as credit cards or loans. For example, in the United States, about 22% of US adults<sup>32</sup> are "unbanked" and in developing countries, this number can be as high as 65%.



# Competitive Landscape

Since the initial writing of this whitepaper the lending and borrowing landscape has changed dramatically with the collapse of most of the centralized players such as BlockFi, Voyager, Celsius, and FTX. The majority of these centralized competitors have gone out of business as a result of Three Arrows Capital and the FTX collapses which showed poor governance and exposure to a large amount of high-risk private lending. This competitive analysis now discusses how MELD's Instant Crypto-backed Loan services are superior to limited competitor products and services in the market now.

In this new landscape, the biggest difference between MELD and the rest of the market is when a user supplies collateral they earn a yield against that asset which either offsets the borrowing interest rate or marks the effective interest positive in favor of the borrower. This is a fundamental competitive advantage MELD has over its competitors.

## MELD vs Other Lending Solutions

	MELD	Centralized crypto-fiat lending	Peer-to-peer crypto-fiat lending	Traditional Lending
<b>Crypto assets accepted</b>	✔	✔	✔	✘
<b>You keep ownership of your assets (non-custodial)</b>	✔	✘	✘	✘
<b>Get yield from supplied collateral</b>	✔	✘	✘	✘
<b>Fees</b>	No	Yes (Application Fee)	Yes (Membership fees, loan fees, etc.)	Yes (Application Fee, Administration Fee, Commitment Fee, Legal Fee, etc.)
<b>Personal loans</b>	Worldwide	Limited	Variable	Limited
<b>Business loans</b>	Worldwide	Worldwide	Variable	Regional or domestic
<b>No credit check</b>	✔	✔	N/A	✘

The decentralized nature of MELD puts forth a variety of benefits. This is a large factor that sets us apart from our competitors. These companies are bound to US regulations, which limit their customer base. In contrast, the MELD protocol has access to the DeFi ecosystem of financial services and customers worldwide.

Furthermore, MELD products are accessible to users with little to no credit (no credit checks) and do not have geographic restrictions. The crypto loan executes instantly as there is no approval procedure. As soon as the crypto assets transfer to the on-chain smart contract, and confirmation of the transaction takes place on the blockchain, the client can



start spending the fiat currency of their choice. Due to the decentralized nature of MELD, the interest rates are highly competitive, and there are no additional or hidden fees.

## MELD Fiat Liquidity Providers vs Competitors

	<b>MELD</b>	<b>Coinbase</b>	<b>Nexo</b>	<b>Binance</b>
<b>Speed of funding</b>	Real-time	24h	Real-time	Real-time
<b>Application process</b>	Instant	Instant	Instant	Instant
<b>Earn yield on supplied collateral</b>	✔	✘	✘	✘
<b>Time to fiat funds</b>	Instant*	Instant*	Instant*	Instant*
<b>Lending product</b>	Loan, Genius Loan, credit line, debit card	Bitcoin loans only	Loan, debit card	Loan, debit card
<b>Repayment options</b>	Any Crypto or Fiat	Fiat	Borrowed asset	Borrowed asset
<b>Collateral release</b>	Instant	Instant	24h	Instant
<b>Fees</b>	None	None	None (limited)	None
<b>Withdrawals</b>	Free & instant*	Free & instant*	24 Hours 1-5 based on loyalty tier	Free & instant*
<b>KYC/AML</b>	Yes	Yes	Yes	Yes
<b>Token benefits</b>	Staking rewards	No	No	No
<b>Product coverage</b>	Worldwide, personal & business	US Only	Worldwide	Worldwide
<b>Non-custodial (keep ownership of keys)</b>	✔	✘	✘	✘
<b>Legal jurisdiction</b>	EU	USA	Bulgaria	???

\* Varies based on the wire transfer times.

MELD is seeking to become the leading fiat currency lending protocol in the crypto-sphere. Competitors like Nexo use Ethereum as their layer-1 and high transaction fees affect their efficiency. The majority of the other players in the market utilize tiered earnings on interest rates with support from a centralized exchange and deeper traditional Wall Street backgrounds. MELD focuses on the crucial features of security, decentralization, fee reduction, and regulatory independence. Our reduced fees do not favor the largest token holders, instead, we maintain incentives equally through our protocol. Decentralization is a huge aspect of connecting DeFi to traditional fiat markets and ensuring a protocol that maintains our Mission and Values.

Competitors offer to lend against a user's assets without giving the user the yield generated from the collateral. This behavior is more akin to banks than DeFi protocols. In comparison, the MELD protocol offers better yields for suppliers to try and facilitate a positive total net yield for suppliers. We expect this will attract deeper liquidity and mainstream adoption for institutions and individuals. Consequently, allowing our platform to offer more services for individuals to find their perfect loan and institutions to take advantage of the modular money effect of decentralized finance compared to





competitors. MELD also ensures the best opportunities, and flexibility of parallel financial jurisdictions, in contrast to just the USD dollar.

## MELD Fiat Liquidity Providers vs Competitors

	<b>MELD</b>	<b>Coinbase</b>	<b>Nexo</b>	<b>Binance</b>
<b>Interest-bearing instruments</b>	Worldwide	USA Only	Worldwide except for USA, Estonia & Bulgaria	Worldwide
<b>Liquidity denomination</b>	AUD, CAD, CHF, DKK, EUR, GBP, HKD, HUF, PLN, RON, SEK, SGD, USD, JPY and AED	USD	USD, EUR	USD
<b>Time to withdrawal</b>	Instant*	<1 day	<3 days	<1 day

\* Possible 24-hour delay if more than \$100,000 equivalent due to AML regulations.

Fiat liquidity providers have the most flexibility under our protocol. Fast fiat access ensures that MELD is like transferring money between personal bank accounts. The DeFi industry focuses on competing with the US dollar, however, it excludes key markets and institutions outside of the USD markets. In contrast, MELD will initially provide fiat liquidity and over time we will offer this to our users of the MELDapp. MELD ensures that fiat liquidity is available for withdrawal when needed the most. Our fiat oracle produces the proper regulatory documents for both SWIFT and SEPA payment standards resulting in overarching availability for traditional institutions across our markets.



## Technology

MELD began its life as an innovative lending and borrowing protocol with the goal of offering crypto to fiat loans. Through the development of these products, it became clear that we would need direct access to fiat bank accounts and a more efficient layer 1 infrastructure. As a result, the scope has expanded to include an electronic money license and a layer 1 blockchain. Together these three major components provide us with the technology needed to achieve our initial vision.

MELD is a trustless DeFi lending and borrowing protocol, following the composability approach known in DeFi as “modular money”, allowing for new and existing protocols to connect with each other to improve the overall potential of the ecosystem, creating new financial services of different degrees of complexity.

Our protocol is easily integrated into other applications to compose more sophisticated solutions well beyond the mandate of MELD. This puts MELD in the middle of digital innovation and transformation in the financial industry.

MELD is a layer 1 blockchain built specifically for capital efficiency using the Avalanche subnet tech stack for fast and decentralized deployment. The MELD blockchain offers up to 2000 TPS and sub 1 US cent transaction fees and it is EVM compatible.

MELD.FI is a new-generation Neobank and is a registered Lithuanian electronic money license to offer fiat depository accounts and debit cards to users. MELD.FI supports SWIFT and SEPA transfers and gives users the ability to hold 15 different currencies.

MELD continuously pushes for technical excellence to support our goals as a protocol in the broader ecosystem, building our talent to work on cutting-edge technologies to position ourselves as a leading financial services protocol in the world.

## Our Approach

### Usability

At MELD we build practical products to deliver the best user experience. Beautiful formulas on paper or shiny apps with badly designed tech are not good enough for us. Our goal is to design and develop a product that everyone can use, not only tech-savvy users.

To achieve this, we first focus on protocol performance; always aiming for cost, time, and space-efficient solutions.

We achieve this by carefully selecting what platforms to build on top of. We want to ensure cheap and fast transactions and that's why we are building on Cardano and our own network.

Combined with the most accessible, usable, and beautiful wallet that is our MELDapp, users will have a seamless experience that is yet to be seen in the DeFi world today. It is highly critical for us to expose these novel technologies to every single human being out there.

Usability should not be mistaken for popularity. There are many applications in the market that are usable because they copy what is currently popular in the market. This results in a product that is always chasing what is fashionable and not building toward a product with its own vision. Being usable is a balance between what a user knows and expects and what is best for the action the user wants to achieve.



## Security

This is the number one priority for MELD. With the highest responsibility for the users and values of the protocol, we have to go the extra mile given how the whole ecosystem is constantly under attack. We have a budget for security research and operations to continuously improve our performance on this front.

We constantly ensure our utmost security standards for our own work and people on paper, private networks, and public networks. This is an effective and required way to prevent issues and find vulnerabilities to patch. We accomplish this through our own security engineers, third-party auditors, and cutting-edge technology systems.

However, security must not stop at MELD. Being part of a bigger DeFi ecosystem, we are also exposed to potential security flaws on other projects that might negatively affect our systems and users. We always will collaborate with partners and other protocols to ensure a secure ecosystem exists for everyone to use.

## Correctness

We ensure the correctness and security of our systems by aggressively reviewing, testing, and attacking the software ourselves while collaborating with multiple security-focused companies for auditing all our contracts and software so that our users can safely use our protocol, minimizing the security risks of interacting with complex software systems.

On top of all our internal efforts to make sure our systems are secure and resilient, we open-source the code base for the community to inspect, evaluate and collaborate with us on building the best systems possible.

## The MELD Protocol

MELD believes in the power of the protocols, not platforms. The MELD protocol consists of a collection of smart contracts that, along with the Neobank, determines the actions and features available to different users. This includes how lenders can deposit fiat to earn interest and yield, the calculation of yield or how borrowers can collateralize crypto assets, and the terms that govern that smart contract, among many others. The section below outlines the architecture and characteristics of the protocol.

These protocol rules are in the form of decentralized and trustless on-chain smart contracts that act the same for everyone. No individual will be powerful enough to change the protocol parameters and how it behaves. The rules are always transparent and will require a democratic voting process via the MELD DAO governance system to change.



## Users

User Type	Description
<b>Fiat Liquidity Providers / Supplier</b>	Users who deposit assets to the protocol to earn interest and yield
<b>Borrowers</b>	Users who borrow assets using their previously supplied assets as collateral
<b>Liquidators</b>	Users who maintain the lending and borrowing system in a healthy status liquidating any position above the risk factor ensuring no bad debt is created in the protocol
<b>Stakers</b>	These people stake their bonded \$MELD tokens in the MELD stability pool to provide insurance, earn a yield

## Interest

The interest rate is the parameter that determines the cost of borrowing and by proxy the profitability of supplying assets. The interest rate is denominated in annual percentage rate (APR).

The interest rate changes depending on the utilization of the assets in the lending pools, enabling the market to reach an equilibrium through the supply and demand mechanism of supplying and borrowing.

The values of the parameters in the interest rate curve are updateable and initially set based on the risk profile of the asset in question and can subsequently be adjusted in response to changing conditions through the protocol governance.

### UTILIZATION RATE

Each lending pool enables users to supply their assets, and other users to borrow those same supplies. The ratio of the borrowed to supplied assets is called the utilization rate:

$$\text{Utilization rate} = \frac{\text{Borrowed assets}}{\text{Supplied assets}}$$

So a pool with 1M tokens supplied, and 500,000 tokens borrowed has a utilization rate of 0.5 or 50%.

### BORROWING RATE

The borrowing rate determines the APR of loans or the cost of maintaining it per year in terms of an annualized interest rate. The interest rate is determined by the utilization rate of the pool the user has borrowed from through the following function:

$$R = \begin{cases} R_0 + \frac{U}{U_{optimal}} \cdot R_{slope1} & \text{if } U < U_{optimal} \\ R_0 + R_{slope1} + \frac{U - U_{optimal}}{1 - U_{optimal}} \cdot R_{slope2} & \text{if } U \geq U_{optimal} \end{cases}$$

With:



- $R_0$ : Base variable borrow rate
- $R_{slope1}$ : Interest rate slope below  $U_{optimal}$
- $R_{slope2}$ : Interest rate slope above  $U_{optimal}$
- $U$ : Utilization rate
- $U_{optimal}$ : Target utilization rate

The parameters are unique to each pool, based on the risk profile of the asset and updateable through the protocol governance.

### LENDING RATE

The lending rate determines what the APY is for supplying assets to the pools. This number is dependent on the utilization rate of the pool and the interest rates paid by the borrowers. A portion of the interest generated is reserved for the treasury, set by the reserve factor.

$$R_t^l = R_t^b * U_t * (1 - rF_t)$$

With:

- $R^b$ : The borrowing rate
- $U_t$ : The utilization rate
- $rF_t$ : The reserve factor

As an example, if the utilization rate is 50%, the borrowing rate is 3.2% and the reserve factor is 0.1, then the lending rate is 1.44%.

If on the other hand, the borrowing rate is 80%, the interest rate will increase based on the parameters, for example to 5%, and the lending rate will be 3.6%.

## Idle Asset Yielding (Yield Boost)

### CONTEXT

The idea of the lending and borrowing protocol is to generate yield for lenders, and offer available and preferably low-interest loans to the borrowers. The primary mechanism driving this is assumed to be the interest rate which dictates the cost of money for borrowers, and in turn, defines the yield for lenders.

**Lenders** will follow the highest yielding option with a reasonable risk profile

**Borrowers** want to minimize their interest rate obligation

In order for people to be able to borrow effectively, and especially cheaply, there needs to be lots of assets available for borrowing and a low-interest rate.

Market dynamics in this case would dictate that liquidity is drawn out since it is unprofitable for the LP, which would potentially rapidly increase the borrower's interest rate, and take available (idle) liquidity off the table for future borrowers.

The basic idea is that the removed liquidity and higher interest rate would sufficiently increase the yield on the asset to incentivize liquidity to be reinjected until an equilibrium is reached.



This creates periods of high volatility in both available liquidity and interest rates, both factors negatively impact borrowers. Rapidly rising interest rates make loans more expensive to maintain, and especially with illiquid/fiat loans, combined with the volatility of the LTV due to the inherent collateral volatility, the cards are stacked against one of the pillars of the protocol revenue stream. Combined with a possible denial of service due to lack of sufficient liquidity, the system could lead to some undesirable outcomes.

### SOLUTION

Some assets have native, or liquid staking mechanisms that provide a virtual risk-free way of generating a yield. These mechanisms can be used on the idle assets in the pool, i.e. the tokens that have been supplied, but not currently lent out.

In practice, this means that in addition to the regular yield, lenders to these pools will be eligible to receive an extra yield boost equal to:

$$(1 - U_t) * S_r$$

Based on the idle assets and the staking reward rate. This reward goes down as the utilization of the pool goes up, however, this is in relation to the base yield from the interest rate, which goes up with utilization, and the result is a boosted APY for suppliers in conditions with low rates of borrowing.

The boosted yield a supplier will receive from one of these assets is then in total up to\*:

$$\text{Boosted yield} = (R_t^b * U_t + (1 - U_t) * S_r) * (1 - rF_t)$$

\*There is a caveat that for very low utilization conditions the boost is slightly lowered to avoid a negative incentive from supplying more liquidity to the pool.

### EXAMPLE CASE

In the basic case, \$10M worth of assets are provided as liquidity, and \$1M is borrowed at a 2% interest rate. The active liquidity is 1/10, which means that the absolute maximum base yield an LP can get in this scenario is 0.2% APY.

In comes the yield boost:

**Native Staking ADA** (i.e. liquid staking, virtually no risk and around 4% yield)

**Liquid Staking AVAX** (i.e. liquid staking, virtually no risk, and around 7% yield)

**Liquid Staking ETH** (i.e. liquid staking, virtually no risk, and around 4.8% yield)

Let's take ADA as an example. With the yield boost, the 0.2% base yield is supplemented, and the suppliers receive

$$\begin{aligned} \text{Boosted yield} &= (2\% * 0.1 + (1 - 0.1) * 4\%) * (1 - 0.1) \\ &= 3.42\% \end{aligned}$$

So the yield for lenders is 3.42% instead of the expected 0.2% yield without the additional yield generation or more than 20x increase in expected yield.

The results of this solution provide MELD with a more capital-efficient solution where liquidity is used to generate yield for suppliers, without any additional cost to the borrowers.



## LP Tokens & NFTs

MELD will utilize a system of Lending tokens (LP tokens). Each type of asset has a corresponding LP token. This token has its price pegged to its underlying asset and modified after each block. The change in the price represents the interest that the user is entitled to for each unit of lending tokens.

Typically these LP tokens are minted directly when the user deposits their assets, and depending on how many assets they supply, their wallets fill up with different kinds of LP tokens.

To avoid this confusing user experience, the protocol will store a number representing the amount of Lending/Debt token of each position and give the user a Supply NFT that shows their position, yield start date, and the ability for users that want to, to use the NFT and withdraw LP tokens, in case the user wishes to use them for something.

When a user deposits, or withdraws assets from a lending pool, the protocol will create or update their lending position and amount of LP tokens based on their current accumulated interest. When a user withdraws assets, the protocol subtracts the amount of the LP tokens from the lending position and pays a larger amount of underlying assets back to the user. The difference is the yield that the user receives.

Similarly, each user borrowing assets from the protocol will store the corresponding amount of debt tokens in their CDP, so that when the debt is paid back, a higher amount of the underlying asset is required to reduce the debt tokens.

This approach is beneficial because:

- This simplifies the implementation when deposit and borrow time is not required to be stored on-chain.
- Transferring lent assets is easy, as they're represented by the corresponding Deposit tokens. Users are free to send these tokens to anyone they wish to transfer the lent asset.
- Deposit tokens can be listed on any DEX to increase their liquidity.

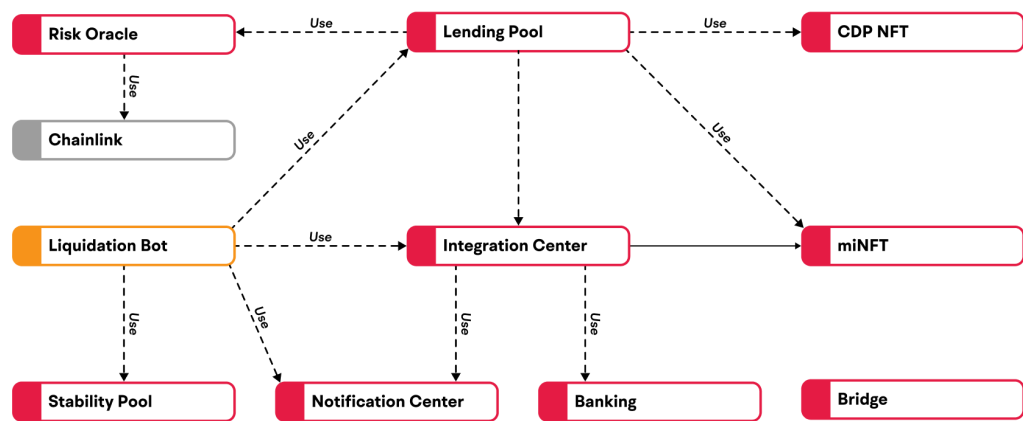
The accumulated interest  $I$  during a time  $\Delta T$  at a variable rate  $R$  is defined as follow:

$$I_t = \begin{cases} 1 & \text{if } t = 0 \\ \left(1 + \frac{R_t}{T_{year}}\right)^{\Delta T} \cdot I_{t-1} & \text{if } t > 0 \end{cases}$$

With:

-  $T_{year}$ : The number of slots per year

-  $R$ : The borrowing/lending rate



(Fig 17: Component models and relationships)

### ACCESS LAYER

This is the layer that is responsible for handling user interactions and providing access to the system. It includes the following components: web browser in general for different OS, mobile web browser app, and mobile device. The access layer communicates with the presentation layer to retrieve and display information to the user, and with the application layer to perform actions on behalf of the user.

### PRESENTATION LAYER

This layer is responsible for presenting information to the user in a user-friendly way. It can include the following components as MELD web page and MELD mobile app. The presentation layer communicates with the application layer to retrieve the information it needs to display, and with the access layer to handle user input.

### APPLICATION LAYER

This layer is responsible for handling the business logic of the system and performing actions on behalf of the user. It can include components such as business rules, workflows, or services. This includes the Crypto Wallet, banking system, Fiat On-Ramp / Off-Ramp, and bridge system. The application layer communicates with the presentation layer to retrieve information to display and with the support layer for additional support like authentication and authorizations.

### SUPPORT LAYER

This layer provides additional support services to the system, such as authentication, authorization, logging, monitoring, and configuration. The support layer includes Blockchain API listeners and External API listeners to keep the data up-to-date between different layers. The support layer communicates with the application layer to provide these services, and with the data layer to access the necessary data.

### DATA LAYER

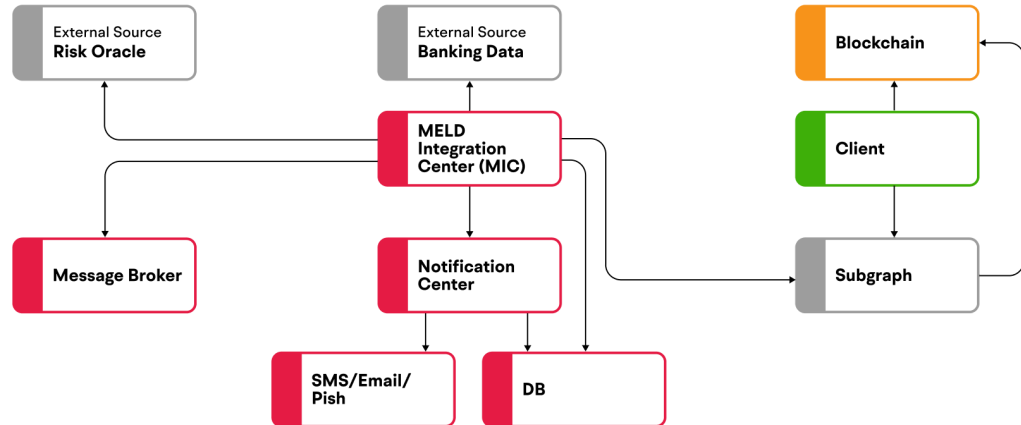
This layer is responsible for managing the data of the MELD system, such as storing, retrieving, and updating it. It includes the following components: Blockchain API nodes, PostgreSQL, Redis Cache, and The Graph. The data layer communicates with the application layer to provide the necessary data, and with the infrastructure layer to access the physical resources it needs.





## INFRASTRUCTURE LAYER

This is the bottommost layer which provides the physical resources required by the MELD system, such as the blockchain, Docker, AWS/GCP Services, and The Graph Services. The infrastructure layer communicates with the data layer to provide the necessary resources for data storage and retrieval and with the support layer for additional support like security and backups.



(Fig 18: Data Flow and Context)

## Core Smart Contracts

### LENDING AND BORROWING CONTRACT

Through the lending and borrowing contract, the MELD protocol controls all the deposits, withdrawals, and yielding mechanics in the system.

Users can deposit supported tokens in the protocol to create an on-chain register that they can then borrow against, creating a collateralized debt position (CDP).

The protocol gives the user a set of LP tokens to track the deposited collateral, facilitating composability with other protocols.

This contract also handles the liquidation of CDP that does not meet the collateral criteria for a pre-defined risk factor.

Borrowers can deposit more collateral to their CDP through the borrowing contract to up the collateral ratio and avoid liquidation. They can also withdraw collateral if the CDP's collateral ratio allows, but this will reduce future yields and might contain protocol fees.

### STAKING CONTRACT

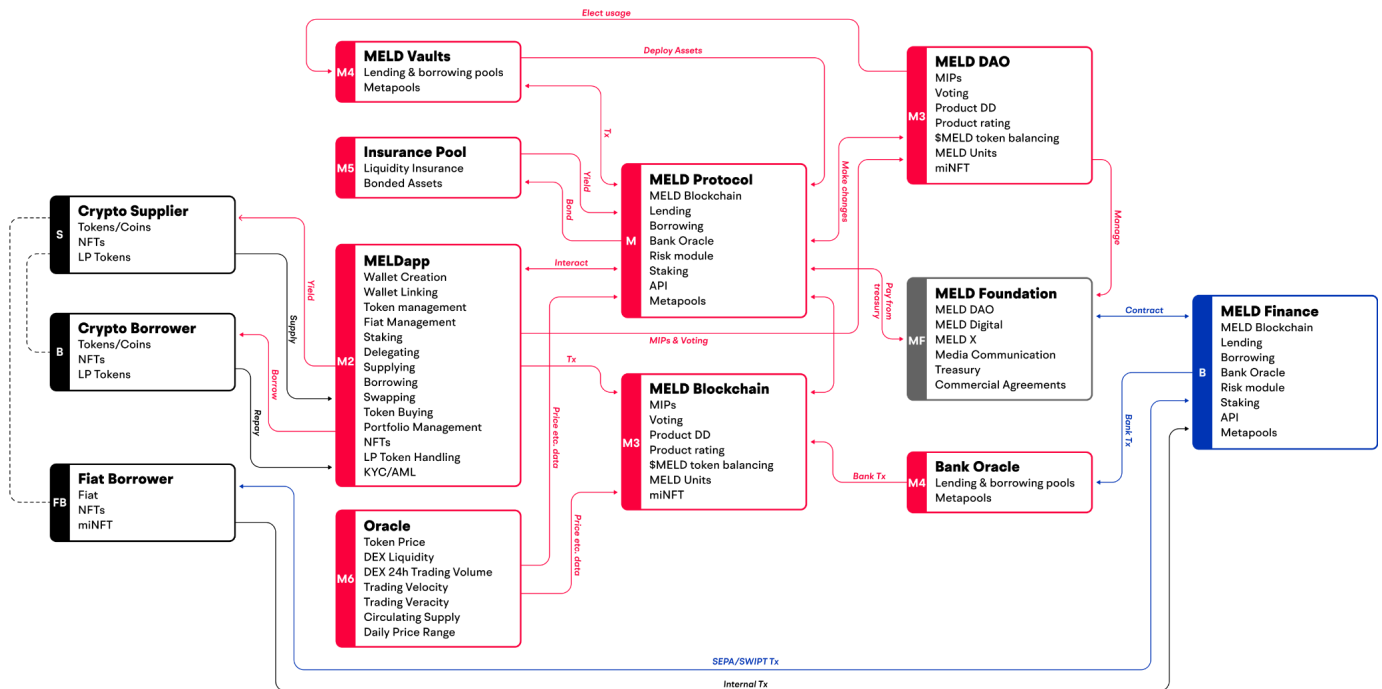
Through the staking contract, a protocol user can stake MELD tokens to earn protocol rewards. The staked MELD tokens are used to provide insurance against collateral liquidation and LP permanent loss. The contract allows users to unstake anytime.

### GOVERNANCE CONTRACT

This contract controls protocol parameters and allows for the MELD DAO to execute successful proposals. Each proposal has a voting period established. After the voting period has concluded, if there is not enough support for the proposal it gets discarded. If there is enough quorum, the proposal passes and the MELD DAO will proceed with the established procedures to execute any actions needed.



## Functional Diagram



(Fig 19: Diagram of the major components making up the MELD ecosystem)

## Oracles

An oracle is a trusted source of information that gives smart contracts the data needed to execute an action, such as asset pricing. The advantage of having oracles is that it provides smart contracts with the ability to execute an action based on external information (such as a bank transfer or asset pricing). This is a crucial aspect of the functionality of crypto-backed loans since the protocol needs to ensure that no bad debt is created.

MELD will utilize Oracle technology to fetch the price of the supported tokens in our protocol (including unwrapped versions of MELDed units) to determine various protocol parameters such as user loan-to-value ratios, liquidation events, and notification events for users.

## Market Analytics

MELD utilizes Oracle technology to relay the data gathered from market analysis to various parts of the protocol, such as smart contracts, notifications, and displays of loan safety levels.

Market analytics intends to provide tools to help MELD users in managing and servicing their loans. It helps in the analysis of the crypto economy, and it creates tools to support the market-based development of MELD. This is an extremely important aspect of the MELD protocol because it can provide significant value for users. To create the best possible experience for all users, it is critical to monitor the market and provide the best possible tools for analysis. This includes tracking the current value of crypto assets, as well as the value at any point in the past.



## Loan Safety Levels

Our oracles provide our users with real-time data on their loan-to-value (LTV) ratio, which is the ratio of the loan amount to the value of the underlying asset used as collateral backing the loan. This data can serve as a decision-making tool for the borrower to determine whether or not to repay the whole- or parts of the loan, or the protocol to issue optional margin calls to request additional collateral from the borrower.

The loan-to-value ratio determines the health of the loan, and to protect depositors' assets the protocol opens collateralized debt positions (CDPs) to liquidation if the loan is at risk of becoming undercollateralized, for example through the value of the collateral falls in value, or the accrued interest making the debt too large. The exact LTV ratio at which a position opens for liquidation is dependent on the risk score of the assets used as collateral, in particular, volatile assets have a lower liquidation threshold than stable assets with lots of liquidity.

For instance, if a user deposits \$1,000 of BTC and borrows \$500 of fiat against it, their LTV ratio is 50%. If the price of BTC goes down, its LTV ratio goes up, and at some point, it will reach the threshold set by the risk score of BTC. If the liquidation threshold of BTC is 80%, then the value of their deposited BTC would have to fall to \$625 for the user to risk liquidation, or the price of BTC would have to fall 37.5%.

## Fiat Borrowing

Users of the MELD lending & borrowing protocol can elect to borrow against the crypto collateral they have supplied and borrow fiat currency (USD, EUR, YEN, GBP, SDG, HKD, etc.) as part of the protocol. Users that want to directly borrow fiat will need to have a MELD finance deposit account and by proxy have passed KYC and AML. Once a user both has a MELD wallet and MELD.FI deposit account they will receive a miNFT confirming they have an active fiat account.

The miNFT will be held (and is non-transferable) in their MELD wallet which then white lists them to do crypto to fiat borrowing.

## Cross-Chain \$MELD Token

The circulation of MELD tokens within the ecosystem is facilitated by crypto bridges and MELDs pioneering capabilities. As users bridge MELD tokens from one blockchain to another, the process necessitates both the burning and minting of tokens. This is where MELD Digital steps in. Its mandate involves keeping a close eye on the liquidity availability on different blockchains, and dynamically adjusting liquidity distribution to promote the robustness and resilience of the MELD ecosystem.

MELD Digital not only ensures seamless and efficient bridging for users across multiple chains but also ensures that adequate liquidity is present on any chain at any given time. This continuous optimization of liquidity distribution is vital for the efficient functioning of the MELD ecosystem, thereby enhancing the overall user experience.

MELD Digital exemplifies a commitment to security and accountability through its function as a multisig wallet. This means access is strictly limited to authorized members of the MELD team, further ensuring the safeguarding of assets within the ecosystem. MELD Digital oversees the MELD treasury, which comprises the majority of unissued MELD tokens and ADA block rewards accrued from the ISPO. This integral role underscores MELD Digital's commitment to maintaining a secure, balanced, and resilient ecosystem for all its users.



In the bridging process, the user deposits their MELD token in a pool on one side (Cardano), the token is locked and the user is then sent the MELD token on the destination blockchain (Ethereum). In this interaction, no minting or burning activities are used.

The total number of MELD tokens will always be 4 billion and this model maintains this with minimum security risk to mint new tokens or burn existing ones.

## EVM TOKEN

On EVM networks, we will use our token contract that has been developed in-house with the following key functionalities:

- Deterministic and vanity addresses of the contract in all EVM networks:  
``0x333000333b26ee30214b4af6419d9ab07a450400``
- Same address everywhere, address to start and finish with a predefined set of hex values
- Role-based access control for minting, burning, pausing and unpausing. Currently, only the MELD team will have access to those features, but the token is ready to onboard extra actors in the future if the security considerations are aligned, such as fully secure and trustless bridging systems.
- Support for meta-transactions following the GSN standard.
  - Will allow anyone to send MELD tokens without paying native fees in another token. Also, allow for MELD to be used to pay for transactions in networks like Ethereum.
- No blacklist user functionality, we are decentralized.
- No upgradeable contracts. The code is law and it will never change.

The token has been audited by Certik and audit results can be found at:

<https://skynet.certik.com/projects/meld>

Below is a list of all of the current \$MELD token contracts

<https://cardanoscan.io/token/a2944573e99d2ed3055b808eaa264f0bf119e01fc6b18863067c63e44d454c44>

<https://etherscan.io/address/0x333000333b26ee30214b4af6419d9ab07a450400>

<https://snowtrace.io/address/0x333000333b26ee30214b4af6419d9ab07a450400>

## BRIDGING

We want to ensure the best experience for our users independently of what network they are in, that's why we are deploying our official native tokens in all the networks we intend to support, rather than offering a "wrapped" version of the tokens deployed in Cardano.

In order to do so, while maintaining the total supply of 4b MELD tokens, we will have to mint and burn tokens into the networks that we integrate with. For security reasons, this will be done by us at the beginning with a safe multisig approach that will ensure all minting and burning is done in a secure way and we don't expose ourselves to third-party security risks.

Bridging is difficult. We've seen the potential risks of other players in the space getting hacked on a regular basis. Taking this into consideration, we are approaching integrating with bridges similarly to what other big tokens in the space are doing (USDC, for example) and offering our liquidity rebalancing service for big amounts of tokens, so that our partners and big users can have a secure, native way to transfer their funds.

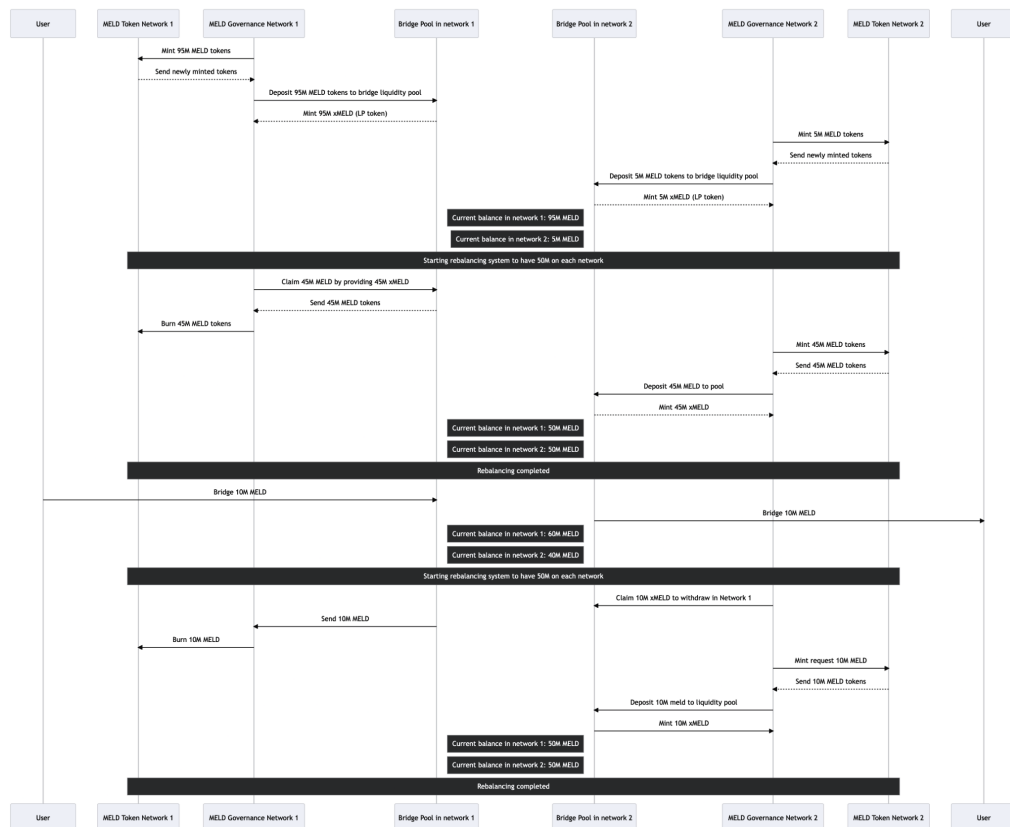
For smaller amounts, users will interact with third-party bridges that we will closely work with. They will have native MELD liquidity pools on multiple networks, and users will deposit their liquidity on network A and the bridge will send them tokens on network B.



## LIQUIDITY BALANCING

The MELD DAO alongside MELD Digital uses multi-sig wallets to mint and burn large numbers of tokens in order to rebalance the distribution of MELD across all of the blockchains. The DAO uses the MELD treasury to do this. The DAO monitors the flow of MELD tokens on each blockchain and if there is a significant imbalance of liquidity on one of the chains then the DAO, using their multisig signing will burn MELD tokens on one chain and mint on another.

For example, if a large number of users decide to move their token from Ethereum to Cardano, the MELD tokens on the bridge pool on the Ethereum side will grow, while the Cardano bridge pool will be depleted. The DAO will then burn tokens on the Ethereum side and mint more to fill the Cardano side bridge pool.



(Fig 20. \$MELD multi-chain token rebalancing graph)

Using this method the dangers of a publicly available mint and burn contract are minimized because a mint or burn action will require a multi-sig signing process.

## MELDapp

This is a non-custodial wallet supporting multiple blockchains and making it easy to interact with the MELD protocol. The wallet will be deployed across multiple platforms, browser-based, iOS, Android, and as a browser extension. The web version will afford a complete API for others to interact with the functionality. The GUI front end will be open sourced and others will be encouraged to integrate the Meld wallet functionality into their tools and projects.

The MELD Web Wallet will have integrations towards multiple assets and bridges, making it as easy as possible for users who have assets to deposit them in the protocol.



The purpose of the MELDapp wallet is to provide the user with a controlled environment for them to be able to handle their crypto in a single interface across several chains including the MELD chain. You can still connect browser extension wallets to it like Metamask but that is a more complex experience. The MELDapp will let you send and receive and view all of your assets and it will give you the chance to supply and earn a yield on all supported tokens in the native wallet as well as a stake to various different pools to earn.

We want to be able to have a very straightforward process to yield earning activities in a much simpler way than is currently possible. An example is to stake AVAX. Today you need to move your AVAX from the X-chain to the P-chain and then stake. This is more or less only doable in the Avalanche native wallet. We want to make these processes in 1 click.

## Wallet Creation and Management

Wallet creation is a function of the MELDapp. We will develop different formats to ensure that everyone is able to interact with the app, such as iOS and Android apps, as well as web-based interfaces and browser extensions.

Wallet creation is 100% free. It takes less than 5 minutes. The creation process is very similar for both the web and mobile applications. If a user wants to interact with fiat currency then will need to pass KYC/AML checks during the borrowing process.

## Blockchain Support

MELD believes in a cross-chain world and we are working toward being able to give users easy and safe access to bridging of assets between chains. The MELDapp will support all of the major blockchains over time and we strive to make the crypto space more accessible and easy than it currently is.

Below is a list of blockchains we will be supporting over the first 6-12 months of the release of the MELDapp.

- Bitcoin (BTC)
- Ethereum (ETH)
- Cardano (ADA)
- Avalanche (AVAX)
- MELD (MELD)
- Polygon (MATIC)
- BNB Chain (BNB)
- Moonbeam (GLMR)

## Token Handling

The MELDapp will initially support a subset of popular tokens on all of the blockchains we support. Over time this list of supported tokens will increase until eventually we will allow users to add tokens on EVM blockchains and we will support the full Cardano token registry.

You can find the current list of supported tokens here:

<https://docs.meld.com/knowledge-base/supported-tokens>



## Staking

One of the major actions MELD will promote in the MELDapp is for users to stake idle assets to generate a yield. While MELD will not run any staking activities we are partnering with many of the leading staking providers to give these staking opportunities to our users.

Initially, we will be offering liquid staking and locked staking for all of the major layer 1 coins we support in the MELDapp. Additionally, we will be offering other staking options based on both decentralized and centralized products such as structured products.

Users will be able to access the risk factors connected to each type of staking and make individual decisions on how they wish to generate a yield.

Some of the staking options we will be offering are as follows:

- Liquid (Native) ETH staking
- Native ADA staking
- Liquid (Native) AVAX staking
- Native AVAX staking
- Liquid (Native) MATIC staking
- Liquid (Native) BNB staking
- Native MELD staking
- Liquid BTC staking
- Liquid (Native) GLMR staking
- Yearn 3pool
- BTC structured product staking
- ETH structured product staking
- MEV Boosted ETH Staking
- Locked USDC/USDT staking

## Notifications

Our monitoring services notify the user when the forecast predicts an increase in their LTV ratio to unsustainable levels under the protocol parameters and risk factors. In such a case the borrower would either contribute more crypto or make a partial repayment in order to maintain a healthy position in the protocol.

As market data analytics provide continuous real-time data, borrowers receive notifications about changes in their borrowing positions. In extreme market risk, our system provides details about recommended actions needed by borrowers that are over-lending relative to their current market position.

Notifications are only available if the user elects to activate them.



## MELD Blockchain

MELD Blockchain is a new layer 1 blockchain and open-source platform, built on the Avalanche subnet architecture and using the Snow consensus mechanism introduced by Avalanche. MELD is unique in that it has tight integration with MELD.FI, a new crypto-friendly Neobank, and supports DeFi activities. It's a new environment to launch decentralized applications (dApps) on a modern, scalable ecosystem, uniquely suited for Decentralized Finance (DeFi).

MELD Blockchain is designed to provide almost immediate transaction finality, making it the perfect fit for performance dApps. Built to have a maximum of 2000 TPS (Transactions Per Second) and fully native support for gas-less meta-transaction, the MELD Blockchain is designed for a modern consumer-friendly experience.

Developers working with Ethereum will find it straightforward to build on MELD Blockchain, given its support for popular programming languages like Solidity (EVM), C++, and Typescript. This feature allows easy deployment of smart contracts, enabling developers to smoothly develop DApps on MELD Blockchain by leveraging their existing tooling.

This makes MELD Blockchain an extremely scalable, composable, and resource-efficient platform for transactions and powering DeFi applications. The platform also aims to help developers deliver a smooth, user-friendly Web3 experience. It achieves this by introducing a new kind of Web Authentication support for Ethereum Virtual Machine (EVM), making it more convenient and secure for users to interact with the blockchain via their browsers.

But MELD Blockchain isn't merely a great platform for dApps; it also focuses on security, reliability, and sustainability. Its innovative consensus mechanism guarantees transaction and data integrity, and its energy-efficient design makes it a more eco-friendly choice compared to traditional blockchain platforms.

This approach promises to offer a more intuitive and native Web3 experience for MELD Blockchain users. MELD Blockchain commits to maintaining the same level of blockchain compliance as present institutional infrastructures. With the upcoming miNFT, a blockchain-based digital identity system powered by NFTs, MELD will provide the flexibility to manage records of all identities across all network nodes.

### Validator Nodes

Validator nodes play a crucial role in the MELD ecosystem, ensuring the integrity and security of our blockchain network. As a validator node, you have the privilege and responsibility to validate and add new transactions to the MELD blockchain. Not only does this enable our network to remain decentralized and robust, but it also grants you the opportunity to earn rewards for your contribution.

If you're interested in becoming a validator node and contributing to the MELD network, simply follow this link and fill out the provided form: [MELD Node Validator Application Form](#).

### DELEGATION

Delegation in the MELD ecosystem is a straightforward process, allowing MELD token holders to delegate their tokens to specific validator nodes. By participating in this process, users can actively contribute to the security and robustness of the network while earning a yield on their staked tokens. The process of delegation is done via the MELDapp, ensuring a user-friendly and smooth experience for all our token holders. Delegation offers not just





a sense of community participation, but also turns your tokens into a revenue-generating asset.

## REQUIREMENTS FOR A MELD NODE OPERATOR

This is an overview of what is needed to be a MELD node operator, technically what they need to do, what requirements we put on them, and what they get out of it:

### Permissions Phase

At least 80% of the nodes need to be running from one of our partner services (Zeeve, Allnodes, Chainstack...) to ensure nodes are updated in time and do not cause network downtime. We will have a close relationship with them and make sure they have all nodes updated to the latest version to avoid having the MELD blockchain shut down.

#### Requirements

- Must have a MELD.FI paid subscription
- Block rewards are distributed to MELD non-custodial crypto wallet
- Most operators will need to run their nodes from partner services
- The node needs to have a 98% uptime
- The node needs to be updated within 3 days of a new version of the node is released
- Needs to have an account on the node operator dashboard
- Must hold a Bank Manager NFT in the node wallet
- Must have a valid Identity NFT in the node wallet
- Must have 2000 AVAX staked (node needs to be an AVAX validator)
- Must have 100,000 MELD in the node wallet
- Node accepts delegation (10-day lockup)
- No node can have more than 20 million MELD staked

#### Benefits

- Nodes pay 6% APY for the first 12 months and then go a performance-based APY
- Nodes block rewards are a combination of Tx fees and treasury payments
  - Treasury payments (20% of treasury revenue generated in the same epoch).

### Permissionless Phase

#### Requirements

- Must have a Bank Manager NFT in the node wallet
- Must have AVAX validator status
- If no valid miNFT, must have 2,000,000 MELD in the node wallet
- If valid miNFT then 500,000 MELD in the node wallet

#### Benefits

- Nodes block rewards are a combination of Tx fees and treasury payments
  - Treasury payments (20% of treasury revenue generated in the same epoch).



### **MELD POS DELEGATION**

Users will be able to delegate \$MELD tokens to specific validator nodes on the MELD blockchain. Delegation is done via the MELDapp and anyone holding \$MELD tokens can get a yield from delegating. Node operators will have the option to take a block reward fee from the delegator's yield, this is a variable amount defined by node operators.

- Initial staking rewards: 6% for the first 12 months (From May 1, 2023)
- Mainnet rewards: 20% of epoch treasury revenue.



## Risk Management

Our risk models perform two major functions for the MELD protocol. The first and most critical is the risk scoring of a specific asset. The risk score results in how much a user can borrow against that asset and what the liquidation threshold is for each asset. Second is the market risk looking at the whole of the collateral in the protocol and the behavior of the market compared to the price exposure the protocol has.

These two core parameters are updated on a regular basis so the MELD protocol can operate with a safe margin of risk. Risk exists in all forms of economic activity, whether it's counterparty risk, market risk, geopolitical risk, or technical risk, nothing is risk-free, not even keeping your money under the mattress.

Our goal at MELD is first to keep the risk element within an acceptable level. Saying this really means nothing because there is no yardstick to measure against, this will be part of the role of the DAO to define what we mean to be acceptable risk. We also want to allow users to choose how risk-prone they want to be. Risk comes with rewards, and some people are happy to accept higher risk for bigger rewards, this is a personal preference and should be decided by each user individually.

When calculating the risk for an asset we are looking at several parameters:

- Age of the token in the market
- DEX the token is traded on
- Depth of liquidity in each of the DEX
- 24-hour trading volume of the token
- 24-hour price fluctuation of the token
- Veracity of token trading or how many tokens are traded in a single trade
- Velocity of a trade or how long does a trade take on a specific blockchain
- Number of token holders
- Token circulating supply

The driver behind using this data is connected to liquidations. If a token has very deep pools and a high 24h trading volume then it will be very easy for a liquidation to close a loan. This means the liquidation threshold can be high and the amount you can borrow against. If the price fluctuation of an asset is very low, for example, a stable coin, then the amount you can borrow against that asset can be high. So each parameter plays its role in protecting users from overextending themselves too far taking on extreme risk and also to make sure the protocol maintains a healthy balance of liquidity, yield, and liquidations so we don't create any debt in the protocol.

Over time our risk models will evolve to become more efficient allowing users to borrow more and reduce liquidations. But this is an evolution, not a revolution. We will be providing MIPs into the DAO to upgrade and modify the risk parameters in the coming 24 months to learn from our experience and build a better lending & borrowing product.

For details about how the interest rate and liquidations are calculated please see the interest section under the MELD protocol.

## Auditing

We individually test all our smart contracts before deployment, via testnet, and on a private blockchain. We also work with reputable blockchain-related companies to further help us perform smart contract audits.

Once we deploy the audited smart contracts we gather data on what's happening in real-time and how users are interacting with the smart contracts. We utilize historic data to



backtest all of our strategies and algorithms to find optimal settings. We then analyze the data gathered from our smart contracts and users' interactions with them. In turn, we use this data to inform our strategy and modify our algorithms to optimize asset security.

The data we gather is also helpful for making business decisions, such as onboarding new users and adding innovative features.



# Customer Acquisition

Blockchain's mainstream moment will come, not when people understand how it works, but why they need it. MELD takes you on a quantum leap into a new paradigm where the old rules of finance no longer exist.

Not only will MELD recruit customers from existing crypto holders, but we will also take an active role in bringing new players to the crypto/blockchain ecosystem by giving them a way out of their financial worries. Our strategy consists of 4 main components:

## Building a strong community

Our focus on building the community will serve to both create the first layer of customers ready to use MELD once it is operable and secondly as ambassadors & cheerleaders in spreading the word. The community building will be spearheaded by creating stakeholders through the Initial Stake Pool Offerings (ISPO) and referrals.

## Strategic Partnerships

We have already partnered with other crypto/blockchain platforms that will include MELD as a financial product for their customers. In addition, we will be partnering with centralized exchanges to have MELD listed on their trading platforms and provide these exchanges access to our borrower LPs. This will increase capital efficiency, provide better margin offerings to their users, and provide MELD fiat lenders with better interest rates. We will continue this approach so as to benefit from easy access to large user and customer bases.

## Influencer & Content Marketing

We will use both influencer and content marketing to first create attention about the ISPO, build the community, and acquire further customers.

Our influencer marketing approach will cover both the use of crypto influencers as well as ensuring crypto thought leaders & celebrity endorsements. This includes sponsorships of podcasts & YouTube channels and cooperation with Twitter, YouTube, and TikTok influencers. In addition, we will focus on influencers with personal finances that operate outside the crypto sphere.

Our content marketing will equally be focused on both the specialized crypto media as well as the mainstream press. It will also drive traffic through SEO linking to our own domain ensuring that we attract the customers actively searching the net for crypto loans.

## Democratization of Financial Tools

As part of our mission to convert the general public into crypto holders we will be running more traditional-based marketing campaigns to educate them about the benefits of blockchain technology for their financial situation. In the way that the mass adoption of the internet came when people understood, not how it worked, but why it was a benefit to them, we will be highlighting how blockchain technology and its financial benefits can change people's lives.

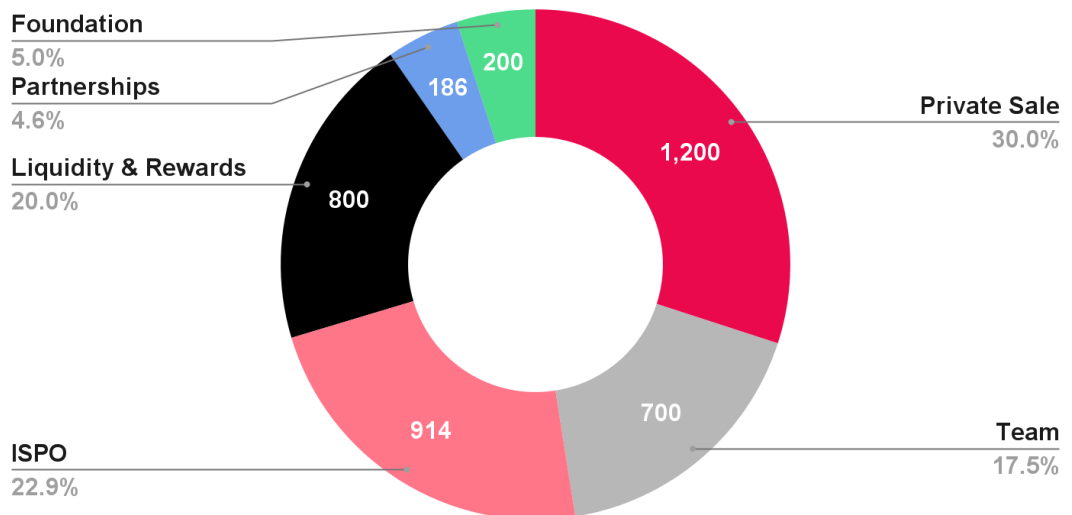


## MELD Token

The MELD token is a multi-purpose token on the MELD protocol. Its core functions are:

- Transaction fee payments on the MELD blockchain
- Protocol governance
- Incentivization
- Protocol insurance

Our token is the medium of exchange under the MELD protocol and MELD Blockchain. Token holders are given incentives to not only utilize their MELD tokens when desirable but maintain a minimum balance to maximize their future earnings under the protocol. To maintain holding utilization, staking provides an annual percentage yield (APY), and fee reductions further strengthen the functions of MELD as a utility for lending and long-term appreciation. Once reaching a significant milestone of decentralization, introducing protocol governance requires maintaining at least a certain fraction of total supply. The protocol has a fixed supply of 4 billion \$MELD tokens with deflationary mechanisms. The initial distribution is:



(Fig 21: Token allocation)

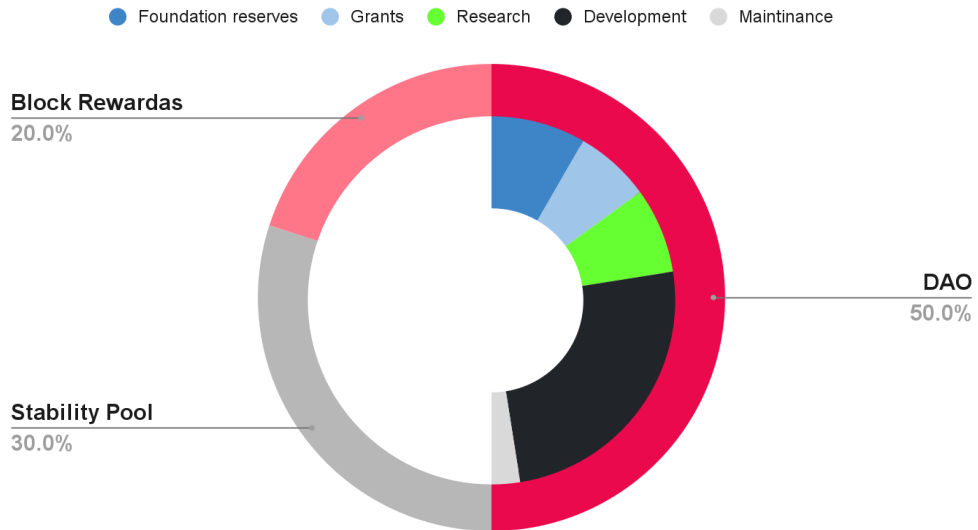
## Revenue Structure

The MELD protocol collects fees for various types of economic activity throughout the MELD ecosystem. These fees or revenue go to the MELD DAO treasury to pay for development, operations, insurance, block rewards, infrastructure, and other costs involved in operating a decentralized protocol and blockchain. The numbers below are subject to change based on risk modeling and commercial agreements.

- 0.9% of borrowing rate
- 0.10% of yield generated in yield boosting
- 70% of gas subscriptions
- 100% of block rewards for validator node run by MELD DAO
- MEV where possible
- 0.06% swapping fees
- 50% fiat liquidity fees for instant settlements



- 0.09% Flash loans origination fee
- 0.05% On-ramp/Off-ramp fees
- 0.05% Minting of MELD Units
- % of NFT sales
- % of staking rewards from 3rd party staking



(Fig 22 Fee distribution chart)

## Stability Pool

The MELD Protocol introduces the Stability Pool, a novel concept that replaces the previous MELD Staking Pools. The Stability Pool is designed to mitigate black swan events across known and trusted assets and provide added protection and stability to the protocol.

### Function of the Stability Pool

The Stability Pool serves one main function, to protect protocol lenders and borrowers in case of unforeseen events such as cascading liquidation and in situations where the collateral is sold below the loan value.

To achieve this, users are required to deposit bonded assets (e.g., ETH, BTC, AVAX) paired with a percentage amount of MELD tokens into the Stability Pool. The deposited funds are held in the pool as a type of insurance. In return for the added risk taken by participants, MELD distributes a portion of all fees collected on the protocol to them, based on the ratio of their contribution.

### Examples of Stability Pool contribution and revenue sharing

- A user deposits 100k USD worth of BTC and 100k USD worth of MELD – they become entitled to 30% of protocol revenue.
- A user deposits 100k USD worth of BTC and 50k USD worth of MELD – they become entitled to 15% of protocol revenue.
- A user deposits 100k USD worth of BTC and 10k USD worth of MELD – they become entitled to 3% of protocol revenue.

The lowest bonded ratio accepted in the Stability Pool is 10:1.



The Stability Pool is designed for users interested in earning a low-risk yield on various assets connected to their MELD tokens. This is considered low risk and helps to stabilize the protocols TVL. Staking bonded assets into the Stability Pool has a 14-day withdrawal lockup time.

## Governance

MELD is a decentralized autonomous organization (DAO), known as MELD DAO. The governance system for MELD DAO v1 is based on key aspects such as proposal creation, discussion, voting, and ratification. The MELD DAO v1 governance process ensures a fair and transparent decision-making environment for the community. The initial interaction of the MELD DAO will be limited in direct voting up or down of MIPs. Over a period of 3 years, the DAO will progressively hand over full control of both MIP creation and voting to the community.

Governance in DAOs is still a very young domain, we have seen over the past two years that when done wrong, bad actors can take control of protocols for their own benefit. We want to make sure this doesn't happen with MELD and many of our DAO design decisions are built around these goals.

The Governance NFT comes with various features such as minting, locking MELD tokens, submitting votes per NFT, and being transferable. The delegation system allows users to delegate their votes to other users, with features such as enabling and disabling delegation, one-level delegation, and vote submission for multiple NFTs.

### MELD DAO v1 Structure

The governance system for MELD DAO is based on the following key aspects:

- Proposals: Created only by MELD-approved users (governance committee).
- Debate: Proposals are debated on an external forum.
- Voting: Proposals are sent to the DAO and can't be modified after voting has started.
- Ratification: Proposals need to be ratified by the MELD committee after voting approval and before execution.

### Governance Participation

Users stake 20k MELD tokens to participate in governance and receive a Governance NFT as a receipt. This NFT is used for voting, and one user can only own one NFT at a time. The NFT can be redeemed for the original amount of stake (minus a potential % fee) after all proposals the user has voted on have concluded.

### MELD Governance Committee

For the initial stages of the MELD DAO we will have a committee of 13 elected people to support the voting process. The governance committee has the following powers:

- Control of the treasury multi-sig wallet
- Rebalancing MELD tokens across chains
- Submitting MIPs
- Ratifying or rejecting a proposal if MIP receive less than 75% of participation compared to the available voting power

If a MIP is approved by receiving more than 75% of the available votes, the governance committee must ratify the MIP.





The committee is designed to start the process of full decentralization and while minimizing the possibility of a bad actor being able to engineer votes and gain control over the protocol. Over the next two years the governance committee role will be reduced.

## **Voting and Delegation**

The Governance NFT is used for voting, with one NFT equating to one vote. Users can delegate their votes to another NFT, and their vote will be automatically cast by the NFT they delegate to. Users can change delegates at any time, but casted votes will not be modified.

## **MELD DAO v1 Interface**

Users will have access to the following information and options in the MELD DAO v1 interface:

- Proposal creation (for the committee).
- Staking MELD to receive Governance NFT.
- Redeeming Governance NFT and getting back staked MELD.
- Viewing proposal history and details.
- Voting in proposals.
- Delegating votes and removing delegates.



# Token Generation Event

## Private Sale and ISPO

The MELD token was offered in two stages:

### Private Sale

Our first offering was a private sale to key contributors and investors. Under the private sale, token holders vest 4% per month until fully vested.

### Initial Stake Pool Offering (ISPO)- Completed

The ISPO was a revolutionary way for investors and the community to support MELD using the Cardano blockchain. Users delegated their ADA using the Yoroi or Daedalus wallet to the public MELD stake pools (ticker MELD1, MELD2, etc.) for any period they chose. Depending on the duration and quantity of ADA staked, delegators received MELD tokens as a reward.

In the ISPO Stake pool, MELD received some of the ADA staking rewards generated by the pool. As a reward for participating in the ISPO, MELD planned on distributing 800 million MELD Tokens, which were airdropped within 5 minutes of the MELD token launch.

Since the ISPO filled ten Cardano staking pools with 64 million ADA each, a bonus of 200 million MELD tokens was taken from the private sale and used to add rewards for more staking pools.

We believed that the ISPO model was much closer to a fair launch than any other option available and particularly exciting as it was native to the core functionality of Cardano.

The initial stake pool offering (ISPO) took place from July 1, 2021, until December 8, 2021. Participants of the initial offering delegated any amount of ADA to MELD ISPO pools for any chosen duration of the offering. Users had the ability to unstake their coins at any time. The calculation of MELD token rewards took place for each Epoch (5 days).

#### Types of MELD ISPO Pools (Past Event)

- 100% Pool – In these pools, MELD received 99% of the ADA block rewards, and participants got approximately 2 MELD for every 1 ADA they staked for the full period.
- 50/50 Pool – In these pools, MELD received 50% of the ADA block rewards, and participants got both 50% of the block rewards and approximately 1 MELD for every 1 ADA they staked for the full period.

#### The criteria for the ISPO delegation were as follows

- The amount of ADA tokens delegated.
- The duration for which the tokens were delegated per epoch.
- Delegation was calculated based on ADA staked at the start of an epoch (if you staked mid epoch it was counted starting the next epoch.)

#### Example (Past Event)

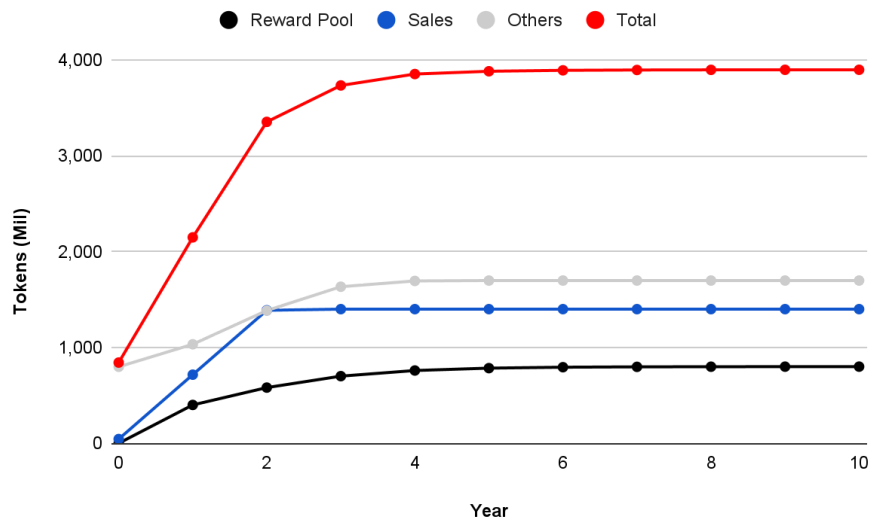
- If 100 ADA is delegated to the 50/50 ISPO stake pool on day one and it is left for the full ISPO period of 32 Epochs you will be rewarded approximately 100 MELD and an estimated 2 ADA in block rewards.
- If 100 ADA is delegated to the 100% ISPO stake pool on day one and it is left for the full ISPO period of 32 Epochs you will be rewarded approximately 200 MELD.



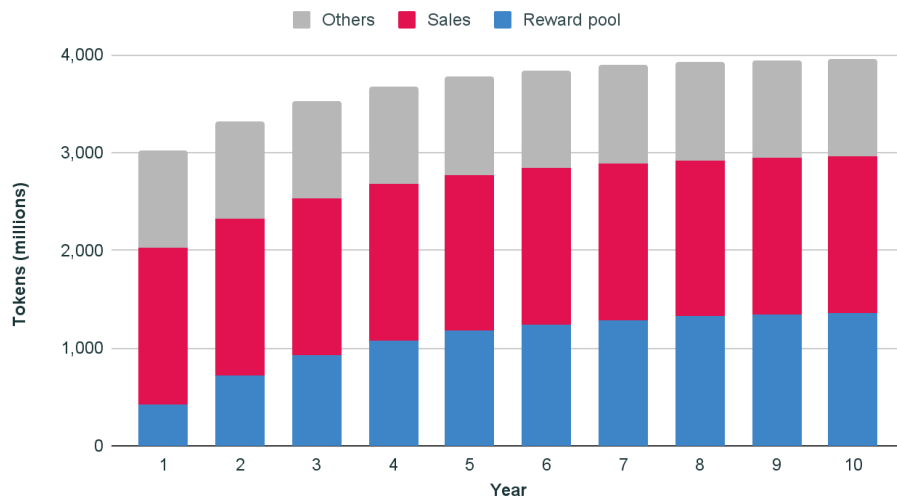
## Token Schedule & Allocation

Our token schedule starts after the private sale. The release of 4% of the private sale tokens are as liquid MELD, becoming available for trading platforms. The rewards for participating or utilizing the token provide rewards for staking that amount to 0.10% a day for the remaining number of outstanding tokens in the reward pool. All protocol participants will receive these awards. Further distribution of reward pools will depend on what actions supply the most value and utility to the protocol. Giving low daily amounts of rewards provides that the outstanding tokens have a technically perpetual amount by always distributing 0.1% of outstanding rewards. The chart below depicts our pool distribution, the token inflation consequence, and its proportional allocation to our total supply.

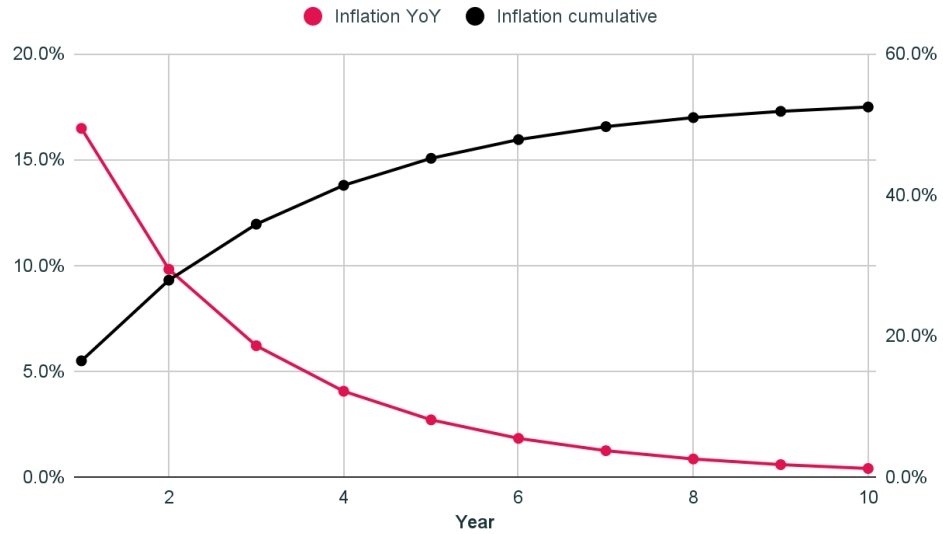
Team members, advisors, and partners have a lockup period of 9 months from token launch and then begin their 4% vesting per month.



(Fig 23: Token Schedule)



(Fig 24: Token allocation)



(Fig 25: Inflation)

## Basics

Ticker	MELD
Jurisdiction:	Singapore & Cayman Islands
Initial Total Tokens:	4,000,000,000
Token type:	Deflationary
Token Generation Events	Jan 30, 2022
Mint/Burn Functionality	Yes
Old Cardano Token ID	6ac8ef33b510ec004fe11585f7c5a9f0c07f0c23428ab4f29c1d7d104d454c44
New Cardano Token ID	a2944573e99d2ed3055b808eaa264f0bf119e01fc6b18863067c63e44d454c44
Ethereum Token ID	0x333000333b26ee30214b4af6419d9ab07a450400
MELD Token ID	0x333000333b26ee30214b4af6419d9ab07a450400
Avalanche Token ID	0x333000333b26ee30214b4af6419d9ab07a450400

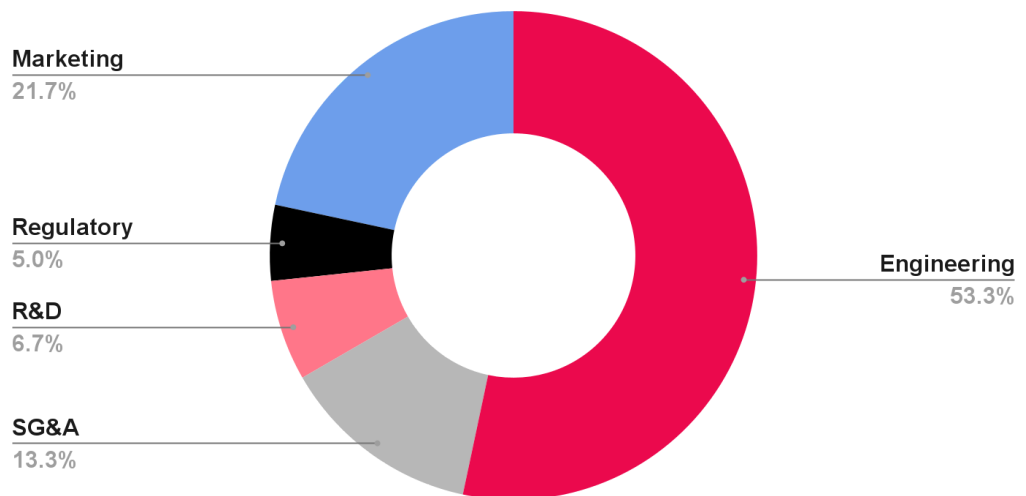


## ISPO

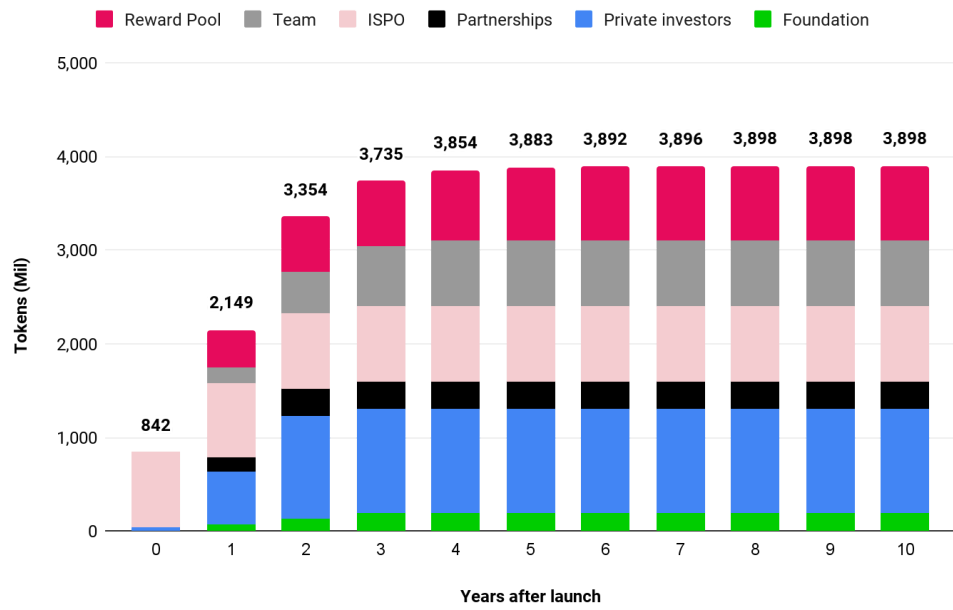
Tokens Rewards Available	800,000,000
Reward Bonuses	+200,000,000 to Reward Pool
Total ISPO token allocation	1,000,000,000 MELD
Minimum delegation	10 ADA
Maximum delegation	NA
100% Approx. Rewards 1 ADA per Epoch	0.065 MELD
50/50 Approx. Rewards 1 ADA per Epoch	0.0325 MELD
Duration in epochs	32
Stage start	July 1, 2021
Stage end	December 6, 2021

## Vesting Schedule

Participant	Allocation	Vesting
Team	17.5%	t+9 Month, then 4% per month
Advisors		t+9 Month, then 4% per month
Partners		t+9 Month, then 4% per month
Private Sale	30%	4% per month
ISPO		NA



(Fig 26: Use of proceeds)



(Fig 27: Breakdown of token release schedule)



## Limitations

**“The only function of economic forecasting is to make astrology look respectable.”**

— John Kenneth Galbraith (economist, bestselling author)

It is important to note that the blockchain and crypto space is still very new. There is very little historical data, past performance results, or academic research on the topic of crypto when compared to the historical data available for standard stocks and equities, let alone the lack of data available for tokenization, economics, and long-term valuations of these digital assets. Stocks (equity) have been around since the early 1600s, and it is only in the past 100 years that we have begun to have more comprehensive and widely accepted valuation models. However, they are still subject to bias and interpretation and suffer from their inputs' quality. On the other hand, Cryptocurrencies have been around since 2008, with a broader recognition around 2016 and an explosion in the number of tokens in 2017. As such, it is way too early to evaluate or comment on the performance, monetary policy, and models behind any of them. As a result, we prefer to rely on sound economic principles backed by data and reasonable assumptions.

Furthermore, any financial projections should generally be treated as a target rather than a prediction. Their purpose is to ensure that the project has sensible and achievable goals, and upon reaching those goals, the rest of the numbers would add up and make sense. On the other hand, they cannot predict the future nor account for all possible variables and scenarios with any reasonable degree of certainty.

The overall goal of this document is to provide a framework that can be used to evaluate the underlying economic principles behind a blockchain project, and upon doing so, we can compare the project to other similar ones in the market to try to determine the likelihood of the success of MELD.

Finally, it is important to note that this is an early draft and is meant to be a living document to be updated as we learn more about the space and as it evolves. We are open to suggestions, corrections, and constructive criticisms and feedback.



## Disclaimer

PLEASE READ THIS SECTION OF THE DOCUMENT CAREFULLY. CONSULT LEGAL, FINANCIAL, TAX, OR OTHER PROFESSIONAL ADVISORS; IF YOU ARE IN ANY DOUBT ABOUT THE ACTION, YOU SHOULD TAKE. THIS DOCUMENT'S INFORMATION MAY NOT BE EXHAUSTIVE AND DOES NOT IMPLY ANY ELEMENTS OF A CONTRACTUAL RELATIONSHIP OR OBLIGATIONS. WHILE WE MAKE EVERY EFFORT TO ENSURE THAT ANY MATERIAL IN THIS DOCUMENT IS ACCURATE AND UP TO DATE, SUCH MATERIAL IN NO WAY CONSTITUTES PROFESSIONAL ADVICE. WE DO NOT GUARANTEE NOR ACCEPT ANY LEGAL LIABILITY ARISING FROM THE ACCURACY, RELIABILITY, CURRENCY, OR COMPLETENESS OF ANY MATERIAL CONTAINED IN THIS DOCUMENT. NO PART OF THIS DOCUMENT IS LEGALLY BINDING OR ENFORCEABLE, NOR IS IT MEANT TO BE.

THE AUTHOR DEVELOPED THIS DOCUMENT BASED ON AN EVALUATION METHOD GENERALLY ACCEPTED BY THE CRYPTO COMMUNITY (QUANTITY THEORY OF MONEY AND DISCOUNTED CASH FLOW ANALYSIS) AND RELIES ON A GENERALLY ACCEPTED SCHOOL OF ECONOMIC THOUGHT (MONETARIST SCHOOL OF ECONOMICS). IT IS IMPORTANT TO NOTE THAT THE BLOCKCHAIN AND CRYPTO AREA IS STILL VERY NEW. There is very little historical data, past performance results, or academic research on the topic of crypto when compared to the historical data available for standard stocks and equities, let alone the lack of data available for tokenization, economics, and long-term valuations of these digital assets. STOCKS (EQUITY) HAVE BEEN AROUND SINCE THE EARLY 1600S, AND IT IS ONLY IN THE PAST 100 YEARS THAT WE HAVE BEGUN TO HAVE MORE COMPREHENSIVE AND WIDELY ACCEPTED VALUATION MODELS. HOWEVER, THEY ARE STILL SUBJECT TO BIAS AND INTERPRETATION AND SUFFERED FROM THEIR INPUTS' QUALITY. ON THE OTHER HAND, CRYPTOCURRENCIES HAVE BEEN AROUND SINCE 2008, WITH A BROADER RECOGNITION AROUND 2016 AND AN EXPLOSION IN THE NUMBER OF TOKENS IN 2017. AS SUCH, IT IS WAY TOO EARLY TO EVALUATE OR COMMENT ON THE PERFORMANCE, MONETARY POLICY, AND MODELS BEHIND ANY OF THEM. AS A RESULT, THE AUTHOR OF THE CURRENT DOCUMENT PREFERS TO RELY ON SOUND ECONOMIC PRINCIPLES BACKED BY DATA AND REASONABLE ASSUMPTIONS.

FURTHERMORE, THE CURRENT MODEL RELIES ON SEVERAL ASSUMPTIONS, FORECASTS, AND REQUIREMENTS EXPLICITLY SPECIFIED BY THE COMPANY BEHIND THE TOKEN OFFERING. AS SUCH, THIS MODEL IS ONLY AS GOOD AS THOSE ASSUMPTIONS ARE. ANY SIGNIFICANT DEVIATION FROM THE INPUT NUMBERS WOULD SUBSEQUENTLY IMPACT THE OUTPUTS OF THIS MODEL. THE MODEL PRESENTED HERE AIMS TO PROVIDE A FAIR TOKEN PRICE VALUATION BASED ON THE MERITS OF THE BUSINESS BEHIND IT (AS FAR AS THEY ARE KNOWN/ESTIMATED AT THE TIME OF THE CREATION OF THIS MODEL) AND CANNOT ACCOUNT FOR ANY POSSIBLE SPECULATIVE ACTIONS AND MARKET MANIPULATION BY ANY PARTY AS WELL AS FOR IRRATIONAL MARKET BEHAVIOR.

NONE OF THE INFORMATION OR ANALYSES IN THIS DOCUMENT IS INTENDED TO PROVIDE A BASIS FOR AN INVESTMENT DECISION, AND NO SPECIFIC INVESTMENT RECOMMENDATION IS MADE. THIS DOCUMENT DOES NOT CONSTITUTE INVESTMENT ADVICE OR AN INVITATION TO INVEST IN ANY SECURITY OR FINANCIAL INSTRUMENT. NO REGULATORY AUTHORITY HAS EXAMINED OR APPROVED ANY OF THE INFORMATION SET OUT IN THIS DOCUMENT. NO SUCH ACTION HAS BEEN OR WILL BE TAKEN UNDER THE LAWS, REGULATORY REQUIREMENTS, OR RULES OF ANY JURISDICTION. YOU ACKNOWLEDGE AND AGREE THAT YOU ARE NOT USING THE INFORMATION IN THIS DOCUMENT FOR PURPOSES OF INVESTMENT, SPECULATION, AS SOME TYPE OF ARBITRAGE STRATEGY, FOR IMMEDIATE RESALE, OR OTHER FINANCIAL PURPOSES.

SOME OF THE DOCUMENT'S STATEMENTS INCLUDE FORWARD-LOOKING STATEMENTS THAT REFLECT OUR CURRENT VIEWS CONCERNING EXECUTION ROADMAP, FINANCIAL PERFORMANCE, BUSINESS STRATEGY, AND PLANS. ALL FORWARD-LOOKING STATEMENTS ADDRESS MATTERS THAT INVOLVE RISKS AND UNCERTAINTIES AND DO NOT GUARANTEE THAT THESE RESULTS WILL BE ACHIEVED AND MAY LEAD THE ACTUAL RESULTS TO DIFFER MATERIALLY FROM THOSE INDICATED IN THESE STATEMENTS. NO STATEMENT IN THIS DOCUMENT IS INTENDED AS A PROFIT FORECAST.

GIVEN THAT THE "REGULATIONS" FOR CRYPTO IN MOST COUNTRIES AT BEST ARE HIGHLY AMBIGUOUS OR COMPLETELY NON-EXISTENT, EACH BUYER IS STRONGLY ADVISED TO CARRY OUT A LEGAL AND TAX ANALYSIS CONCERNING THE PURCHASE AND OWNERSHIP OF CRYPTO AND TOKENS ACCORDING TO THEIR NATIONALITY AND PLACE OF RESIDENCE.

EVERYTHING IN THIS DOCUMENT IS THE AUTHOR'S OWN WORK, WITH EXTERNAL SOURCES AND REFERENCES PROVIDED WHERE APPROPRIATE. SOME PARTS OF THIS DOCUMENT, ON NON-PROJECT-SPECIFIC TEXTS, CHARTS, GRAPHICS, AND FORMULAS, MIGHT BE IDENTICAL WITH OTHER DOCUMENTS PRODUCED BY THE SAME AUTHOR. THESE INCLUDE BUT ARE NOT LIMITED TO THE EXPLANATION OF SOME FORMULAS, MODELING TECHNIQUES, ECONOMIC THEORIES, AND POLICIES.





## References

1. <https://en.wikipedia.org/wiki/Neobank>
2. [https://en.wikipedia.org/wiki/Decentralized\\_finance](https://en.wikipedia.org/wiki/Decentralized_finance)
3. <https://www.investopedia.com/articles/personal-finance/050515/how-swift-system-works.aspx>
4. <https://docs.meld.com/protocol/cross-chain>
5. <https://www.cryptopolitan.com/ark-invest-believes-bitcoin-surpass-golds/>
6. <https://triple-a.io/crypto-ownership-data/>
7. <https://www.newsbytesapp.com/news/business/cryptocurrency-prices-30-05-2023-rates-of-bitcoin-solana-bnb/story>
8. <https://www.bankrate.com/investing/cryptocurrency-statistics/>
9. <https://www.forbes.com/sites/lawrencewintermeyer/2023/05/25/canton-network-launch-signals-the-tokenization-of-the-real-economy-has-arrived/?sh=5ef0b0617798>
10. <https://www.privatebankerinternational.com/features/crypto-2023-private-banking-future/>
11. <https://www.cfainstitute.org/en/research/industry-research/gen-z-investing>
12. <https://medium.com/ryze-crypto-digest/crypto-investor-behavior-research-summary-e35c0c017bcf>
13. <https://fortune.com/crypto/2023/06/01/crypto-venture-capital-harsh-reality-bear-market-tokens/>
14. <https://www.forbes.com/sites/michaelcannivet/2023/05/31/money-market-yields-are-attractive-and-investors-are-taking-notice/?sh=44ae52ca61b9>
15. <https://www.forbes.com/sites/rodberger/2023/02/07/millennials-and-gen-z-reshaping-conventional-industries/>
16. <https://www.coindesk.com/learn/defi-vs-cefi-in-crypto/#:~:text=CeFi%20is%20different.essentially%20paying%20customers.>
17. <https://www.investopedia.com/terms/s/sepa.asp>
18. <https://testdocs.meld.com/docs/meld-nodes>
19. <https://news.bitcoin.com/cambridge-universitys-third-crypto-study-records-101-million-cryptocurrency-users-worldwide/>
20. <https://bitcoindexchangeguide.com/7-things-you-should-know-about-your-average-crypto-investor/>
21. <https://techjury.net/blog/cryptocurrency-statistics/>
22. <https://coinmarketcap.com/charts/>
23. <https://blog.latoken.com/lat-research-the-exponential-growth-of-crypto-markets-to-5-trillion-416c73429148>
24. <https://twitter.com/opinion/status/1609440286932930560> and [https://www.washingtonpost.com/business/heres-to-crypto-going-the-way-of-esperanto/2022/12/14/16b55562-7bf3-11ed-bb97-f47d47466b9a\\_story.html](https://www.washingtonpost.com/business/heres-to-crypto-going-the-way-of-esperanto/2022/12/14/16b55562-7bf3-11ed-bb97-f47d47466b9a_story.html)
25. <https://cryptoguiding.com/articles/how-many-crypto-traders-are-there>
26. <https://www.financemagnates.com/thought-leadership/5-fintech-brands-dominating-crypto/>
27. <https://data.oecd.org/pension/pension-funds-assets.htm>
28. <https://www.oecd.org/pensions/Pension-Funds-in-Figures-2020.pdf>
29. <https://www.macrotrends.net/2016/10-year-treasury-bond-rate-yield-chart>
30. [https://read.oecd-ilibrary.org/finance-and-investment/oecd-institutional-investors-statistics-2020\\_9a827fb7-en#page175](https://read.oecd-ilibrary.org/finance-and-investment/oecd-institutional-investors-statistics-2020_9a827fb7-en#page175)
31. <https://www.pwc.com/gx/en/financial-services/pdf/pwc-elwood-annual-crypto-hedge-fund-report-may-2020.pdf>
32. <https://www.forbes.com/advisor/banking/costs-of-being-unbanked-or-underbanked/>