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Introducing Anchor

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In the past few years we have witnessed explosive growth in Decentralized Finance (DeFi). We have seen the launch of many financial applications covering a broad range of use cases, including collateralized lending (Compound), decentralized exchanges (Uniswap) and prediction markets (Augur). Despite early success and a robust influx of brains and capital, DeFi has yet to produce a simple and convenient savings product with broad appeal outside the world of crypto natives.

To address this pressing need we introduce Anchor, a savings protocol on the Terra blockchain. Anchor offers a **principal-protected** stablecoin savings product that accepts Terra deposits and pays a **stable interest rate.** To generate yield, Anchor lends out deposits to borrowers who put down liquid-staked PoS assets from major

blockchains as collateral. Anchor's yield is thus powered by **block rewards** of major Proof-of-Stake blockchains. Ultimately, we envision Anchor to become the **gold standard for passive income** on the blockchain.

In this post we cover the core concepts behind the Anchor protocol. For the full treatment read through the Anchor white paper.

Key features

The following are key features of the Anchor savings protocol:

- **Principal protection**: Anchor implements a liquidation protocol that liquidates borrower collateral whenever a loan is at risk, thus protecting the principal of depositors.
- **Instant withdrawals**: Terra deposits are instantly withdrawable — no lockup required.
- **Stable interest rate**: Anchor stabilizes the deposit interest rate by passing on a variable fraction of block rewards from collateral assets to the depositor.

Why the savings account?

We believe that the path to mass adoption for decentralized finance is the savings account. The first reason is the sheer size of the market. In the US alone, savings accounts hold roughly 13 trillion USD (we use the difference between the USD's M2 and M1 as a proxy). A 0.1% market share of the US savings market alone dwarfs the combined market value of all stablecoins. Second, we believe that there is no more reliable way to pave the way for retail investors than with a product they are already familiar with and protects their principal. Third, we believe that adoption of other investment products is most straightforward as an extension of the savings account.

Why another savings protocol?

We firmly believe that a stable interest rate is a necessary feature of a savings product with broad appeal. A key limitation of DeFi protocols with savings functionality, such as Compound, Aave and Maker, is the highly cyclical nature of stablecoin interest rates. Anchor solves this by stabilizing the deposit interest rate using block rewards that accrue to collateral assets. Beyond offering low-volatility yield, Anchor is an attempt to give the main street investor a single, reliable rate of return across all

blockchains. By aggregating block rewards from all major PoS blockchains, Anchor aspires to set the blockchain economy's benchmark interest rate.

Tokenized Stakes (bAssets)

One of Anchor's core primitives is the bAsset (bonded asset) — a tokenized stake on a PoS blockchain. A bAsset is a token that represents ownership of a staked PoS asset. Like the underlying staked asset, a bAsset pays the holder block rewards. Unlike the staked asset, a bAsset is both transferable and fungible. Users can therefore transact with bAssets with the same ease as the underlying PoS asset. bAssets are broadly usable — they can be generated on any PoS blockchain that supports smart contracts. bAssets play a key role in Anchor towards offering a stable interest rate to Terra deposits. For in-depth treatment of bAssets refer to the bAsset protocol white paper.

The Terra Money Market

A core building block of the Anchor savings protocol is the Terra money market — a Web Assembly smart contract on the Terra blockchain that facilitates depositing and borrowing of Terra stablecoins (TerraUSD, for instance). The money market is defined by a pool of Terra deposits that earns interest from borrowers. Borrowers put down digital assets as collateral to borrow Terra from the pool. The interest rate is determined algorithmically as a function of borrowing demand and supply, which is encoded by the pool's utilization ratio (fraction of Terra in the pool that has been borrowed).

Borrowing from the Terra money market is as straightforward as locking up collateral in exchange for a loan. Each account has a borrowing capacity, determined by the amount and quality of locked-up collateral. Anchor defines a loan-to-value ratio (LTV) for each type of collateral, which indicates the fraction of the collateral's value that can be borrowed. The borrowing capacity determines the maximum amount of debt an account can accrue.

The Anchor Rate and Rate Stabilization

There is a plethora of staking and savings products, each with its own risk/return profile, and each with a rate that fluctuates over time. Given all those options, what interest rate does the main street investor keep track of? Anchor aspires to be the answer by using block rewards across blockchains to derive DeFi's benchmark interest rate.

With Anchor, the return that depositors can expect is a function of borrowers' on-chain income. The Anchor money market is a unique enabler of "yield transfer" from borrower to depositor by accepting bAssets as collateral. The **Anchor Rate** is defined as an average of the yields earned by borrowers, weighted by the collateral value backing each yield. For instance, if 3mm UST worth of bLuna and 1mm UST worth of bAtom were held as collateral in UST's money market, with yields of 15% and 10% respectively, the Anchor Rate would be 13.75%. The resulting diversified yield, the Anchor Rate, reflects the market's preferred sources of yield on the blockchain. For this reason the Anchor Rate has the potential to be more stable than any individual yield, or any *fixed* collection of yields.

The Anchor Rate plays a foundational role in the Anchor protocol: it is the **interest rate target** for Terra deposits. The Anchor smart contract dynamically distributes block rewards from collateral bAssets between borrower and depositor to achieve the target rate. The key idea here is that block rewards are used to either boost or suppress the deposit rate depending on whether it lags or exceeds the Anchor Rate. The stabilization algorithm therefore ensures that the deposit rate closely tracks the Anchor Rate. Given that deposit interest is paid in Terra, Anchor uses a liquidation protocol to liquidate non-Terra block rewards.

Principal Protection

Anchor implements a liquidation protocol designed to guarantee the principal of depositors. Deposits are safe insofar as all debts against them remain over-collateralized. The function of the Anchor liquidation protocol is to maintain deposit safety by paying off debts that are at risk of violating collateral requirements. The protocol pays back "at risk" loans using **liquidation contracts**, which undertake the task of paying back debt in exchange for collateral plus a fee — the "liquidation fee". Contracts also earn a passive premium charged to borrowers that is calibrated to ensure full coverage of outstanding loans. Liquidation contracts can be written by anyone and are tapped "on demand" when a loan needs to be liquidated.

The structure and incentives built into liquidation contracts enable them to provide higher robustness and solvency guarantees compared to a traditional "keeper" system. Keeper systems rely on arbitrageurs to finance liquidations on a discretionary basis, which can result in liquidity crunches at times of high market volatility leading to huge

losses for borrowers (see the recent wipeout of Maker vaults). Liquidation contracts, on the contrary, are fully collateralized and enforce a lengthy withdrawal period to provide stability in the face of temporary shocks. For in-depth treatment of the Anchor liquidation protocol refer to the liquidation protocol white paper.

Conclusion

We have presented Anchor, a savings protocol on the Terra blockchain that offers a principal-protected savings product with instant withdrawals and a stable interest rate. The protocol defines the Anchor Rate, derived from the yield of the market's highest-demand PoS assets, as the blockchain economy's interest rate benchmark. Anchor utilizes the block rewards of collateral bAssets from the Terra money market to offer depositors a stable return equal to the Anchor Rate. We believe that Anchor's simplicity and robustness make it a fitting answer to the search for a household savings product powered by cryptocurrency.

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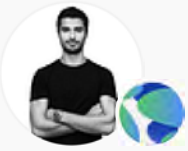

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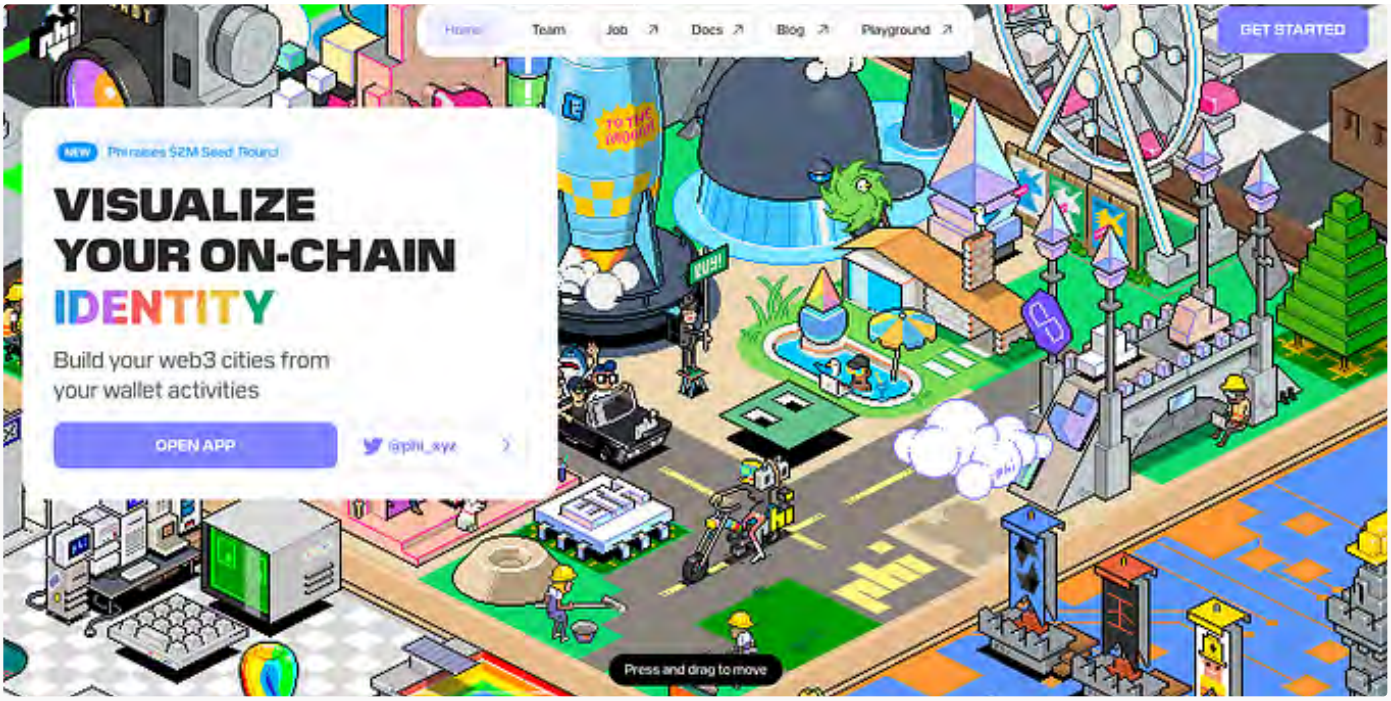

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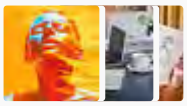

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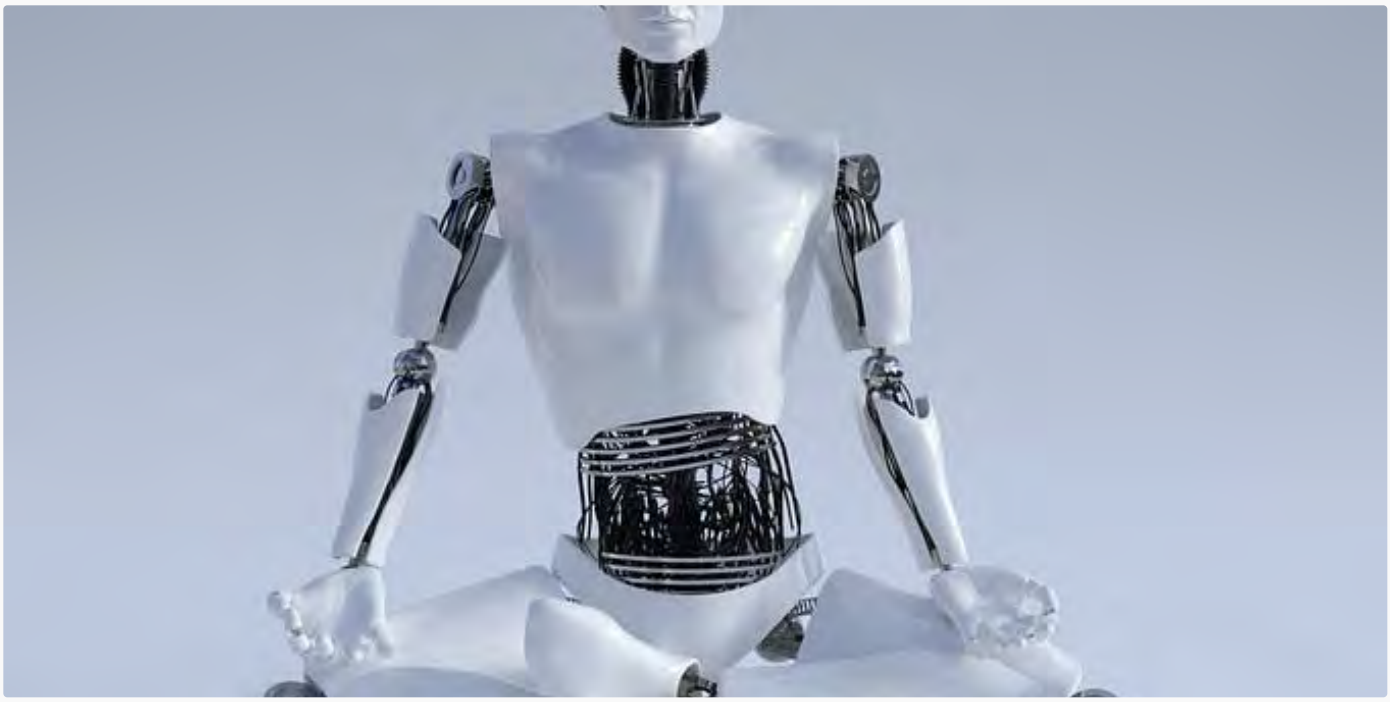

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