

FCI SKYNET NETWORK

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ABSTRACT

The FCI Skynet network aims to facilitate the digitization, listing and trading of traditional assets such as currencies, bonds and other financial instruments, on the blockchain. The FCI Skynet decentral bank will allow platform users to deposit cash, money market instruments or create their own Crypto Depository Receipts (CryDRs) and benefit from onchain / offchain arbitrage. Decentralized organizations and funds that are overexposed in digital currencies can hedge their positions and protect their funding with stable assets. Furthermore, FCI Skynet will provide developers with a complete platform to build tools and applications for transacting, investing and hedging, through leveraging traditional assetbacked tokens. In addition, FCI Skynet will enable instant, nearzero fee, global payments and remittances in the form of fiat to fiat transactions that can be undertaken through peer to peer, business to business or consumer to merchant channels. This white paper outlines the core components comprising FCI Skynet, how they interact, and aims to demonstrate how the network can be built out efficiently using existing infrastructure.

1. INTRODUCTION

Since their introduction with Bitcoin in 2009[1], blockchains have unlocked tremendous value. With this new technology, we can verify and commit transactions in an immutable decentralized ledger, or implemented more broadly, achieve decentralized consensus. This incredible innovation is currently transforming our world by eroding the need for trusted intermediaries, settlement / clearing offices, and middleman service providers across a wide range of industries and

sectors. That being said, due to limited adoption at an institutional level, most of the cryptoeconomy's value remains siloed by usecase or geography. In addition, widespread systemic risk exists due to the bottlenecks imposed by these siloes in the form of challenges and limitations in converting between traditional assets and digital assets. Given the disconnect between the traditional economy and the cryptoeconomy, the same challenges plaguing the former still persist in the latter. Users wishing to transfer

traditional currency between one another still face the time delays and fees imposed by relying on a combination of cryptocurrency exchanges, traditional financial institutions, as well as payment processors. Moreover, traditional individual and institutional investors, who could facilitate the quick movement of traditional assets offchain are deterred from participating due to the fundamental incompatibilities that exist most notably, a lack of transparency and extreme market volatility[2]. Finally, decentralized organizations, who raise funding through crowd sales, as well as decentralized funds and cryptoinvestors, who are overexposed in digital assets and cryptocurrencies, have limited options to diversify into traditional holdings. The risks are compounded further by the fact that digital currencies play a multifaceted role, they are used to reward miners for facilitating transactions; as a means of transferring value; as a speculative

2. TRADITIONAL ASSETBACKED TOKENS

The core stakeholders in the FCI Skynet ecosystem are; noninvestment users, who seek to benefit from the value unlocked by cryptocurrencies and blockchain technology, such as low remittance fees and instant transfers; traditional investors, who seek to benefit from the high returns of the emerging cryptoeconomy; and decentralized organizations / funds and cryptoinvestors, who seek to diversify their crypto holdings with stable lowyield assets, onchain, as to remain transparent to crowdfunders. The needs of all stakeholders could be

investment tool; and most recently, to crowdfund and run decentralized organizations and applications (e.g. decentralized computing[3], decentralized storage[4]). In traditional finance, different instruments are used for these functions and are regulated accordingly. This helps manage systemic risk. Until decentralized regulatory consensus protocols are fully builtout, the cryptoeconomy faces security and fraud risk, in the form of unregulated exchanges; market risks, resulting from extremely volatile currencies that are used beyond their architected purpose; and systemic risks arising from crowdfunds stored in volatile digital currencies and subsequently locked into smart contracts .

4 This paper analyzes the limitations and challenges of the current environment and proposes an approach that leverages existing infrastructure to provide a solution for all stakeholders.

successfully met by bringing the stability of traditional financial instruments to the blockchain. This can be accomplished by minting tethered tokens with onetoone backing of the underlying traditional asset they represent. Using such a method, tethered tokens can be used to denote a currency[5] or even a commodity[6]. By developing a ‘guarantor’ that houses traditional assets and issues tokens representing ownership of the underlying assets, one can enable a widerange of currencies, commodities, money market

instruments and other financial tools, to be openly traded onchain.

3. SYSTEM ARCHITECTURE

The following section outlines the key components of the FCI Skynet network and what is required to facilitate putting traditional assets onchain.

3.1 Public Blockchain

While reliance on another blockchain imposes a longlist of new challenges and limitations, a public and secure blockchain is required for early versions of FCI Skynet, until full cross-chain communication is feasible.

3.2 Cryptocurrency Exchanges

Cryptocurrency exchanges provided endusers with fiat accounts in their local currency and digital wallets to hold cryptocurrencies. User can buy, trade or transmit digital currency, easily converting between crypto and fiat currencies.

3.3 Tethered Tokens

Tethered tokens will be required to create traditional assetbacked tokens. For every traditional asset held a tethered token is minted. Upon the underlying asset being sold, the token is destroyed.

3.4 Guarantor

In order to ensure tethered tokens hold their respective value, a guarantor is needed. The guarantor will hold traditional assets and issue their respective tethered tokens, as well as redeem and destroy tokens in return for

the release / transfer of ownership of the underlying traditional asset.

3.5 Application Layer, Libraries & Templates

Once tethered tokens are established, an array of applications that leverages their capabilities can be developed, including payment processors, remittance wallets and trading platforms. To facilitate rapid application development, a dedicated application layer with userfriendly libraries and code templates will be required.

3.6 Ownership Transfers

Once a tethered token is issued, the underlying asset can be easily traded similar to any cryptocurrency. The high-level process is outlined below:

1. User sends FIAT to guarantor
2. Guarantor returns fFIAT
3. User pays merchant in fFIAT
4. Merchant redeems fFIAT
5. Guarantor sends FIAT to merchant account

With a guarantor backing the tethered token, with the promise to redeem for the underlying asset at a future point in time, the token can stay in the system and be used for onchain and off-chain payments.

3.7 Fees & Charges

Transferring ownership of both digital and traditional assets have associated fees and charges that will need to be accounted.

3.8 Oversight / Regulation

Any onchain transaction representing an offchain transfer of

ownership or value must satisfy international and local regulation and must be managed accordingly. Regulatory protocols / governance tools should be put in place to ensure proper governance and oversight. All transactions must satisfy KYC / AML regulations

4. FCI SKYNET NETWORK IMPLEMENTATION

This section outlines how each component will be implemented in the FCI Skynet network.

4.1 Ethereum Blockchain

The selected blockchain must decouple mining rewards and the underlying transactions between the participants of the system. For this reason, Ethereum is well suited to form the foundation of FCI Skynet's underlying architecture. Mining rewards will be in the form of Ethereum 'gas', while any tethered token will not be part of the mining process[7]. While FCI Skynet is also suited to be built on Bitcoin's Omniprotocol, that approach is beyond the scope of this paper.

4.2 Crypto Depository Receipts (CryDR)

CryDRs are tethered tokens that represent ownership of an underlying traditional asset held by FCI Skynet. In this paper, they are denoted as jAsset (e.g. jUSD, jEUR, jGBP). On release, FCI Skynet will support six fiat currencies and two money market instruments, with plans to add additional financial instruments in the future.

4.2.1 Currencies / Fiat

The first iteration of the FCI Skynet network aims to support USD, EUR, GBP, RUB, CNY, AED with additional currency support gradually added as strategic exchange partners are integrated.

4.2.2 Money Market Instruments

Stable lowyield assets are FCI Skynet's core offering, cryptoinvestors will be able to purchase tokens tethered to US Treasury Bills and ZeroCoupon Certificates of Deposits. For the first iteration of the FCI Skynet network, all money market instruments will incorporate an automatic rollover or accrual mechanism. Meaning, fiat received from matured investments, will be automatically redeployed in similar assets. Similarly, dividend or interest will be accrued until the underlying asset matures or is sold. In future versions, money market instruments will be configurable.

4.2.3 Other Financial Instruments

In the future, as traditional financial institutions are integrated into the FCI Skynet platform, full support of

other financial instruments can be rolled out, including listed and private equity.

4.3 FCI Skynet ‘Decentral’ Bank (FDB)

The FDB will receive / hold traditional assets on behalf of their owners and issue their respective CryDRs. Upon receipt of the asset off-chain, the FDB issues a token and sends it to the owner’s wallet. Upon redemption of a token, the token is destroyed and the underlying asset is transferred to the token holder. While the FDB aims to be fully decentralized, until full onchain integration of traditional financial institutions, large components of the system will need to be offchain. Offchain activity will require the input and oversight of local and international regulators. For this reason, stakeholder interaction must be properly managed to ensure full regulatory compliance without sacrificing transparency and reliability. This will be achieved through asset portals, dedicated entities operating with full compliance in their respective geographies.

4.4 Asset Portals

Asset portals are used to undertake the necessary legal and financial steps to convert traditional assets into onchain digital assets.

Fiat portals will be simple cryptocurrency exchanges. Strategic partnerships can be formed with existing

exchanges while a dedicated FCI Skynet exchange network with sufficient geographic reach can be built out. In addition, by housing a portion of FCI Skynet’s fiat reserves in existing exchanges, transfer times and fees are significantly reduced whilst simultaneously providing exchanges with much needed liquidity.

Nonfiat portals will require off-chain presence to undertake the necessary due diligence and take ownership of non-fiat deposits.

In most geographies, asset portals will require brokerage and money transmitter licenses. In cases involving heavily regulated jurisdictions or more nuanced financial assets, full regulator involvement and oversight might be required.

As regulation evolves, asset portals will be able to decentralize and become community driven. Institutional investors and other financial institutions will be able to list their own traditional assets onchain, using the FCI Skynet platform.

4.5 FCI Skynet Network Token (FNT)

While nonfiat portals will charge offline fees in fiat currencies, the FDB’s onchain fees and commissions will be levied in the form of FCI Skynet Network Tokens (FNT). FNT will be listed on ERC20 compatible exchanges.

5. INFRASTRUCTURE

Critical data, such as user balances and transactions, will be stored on the blockchain while all other data is hosted on development servers. Several development environments, tools and frameworks have already been developed to enable the rapid development of decentralized applications[8]. FCI Skynet will need to develop similar developer components, tools and frameworks to enable the widespread adoption and distribution of CryDRs. Infrastructure will be required across two main dimensions, onchain APIs and offchain APIs / Utils.

5.1 Onchain Infrastructure

Only four key smart contracts will be required for the network to operate effectively.

5.1.1 CryDR Smart Contracts

Each asset registered with the FDB will have a CryDR issued in the form of a smart contract. CryDR smart contracts

will be ERC20 compliant. Forwarding CryDRs between user accounts is similar to forwarding other ERC20 tokens between wallets.

5.1.2 FCI Skynet Decentral Bank Smart Contract

A dedicated FDB smart contract will regulate the work of CryDR Smart Contracts.

5.1.3 Board of Directors Smart Contract (BODC)

The Board of Directors smart contract (BODC) is the only mechanism to interact/influence the FCI Skynet Decentral Bank Contract. BODC will be managed through a voting system, where members of the board can use their Ethereum accounts to vote on BODC actions. Storing and using private keys will be the responsibility of members. Ideally, the board will be composed of crypto thoughtleaders and financial services experts.

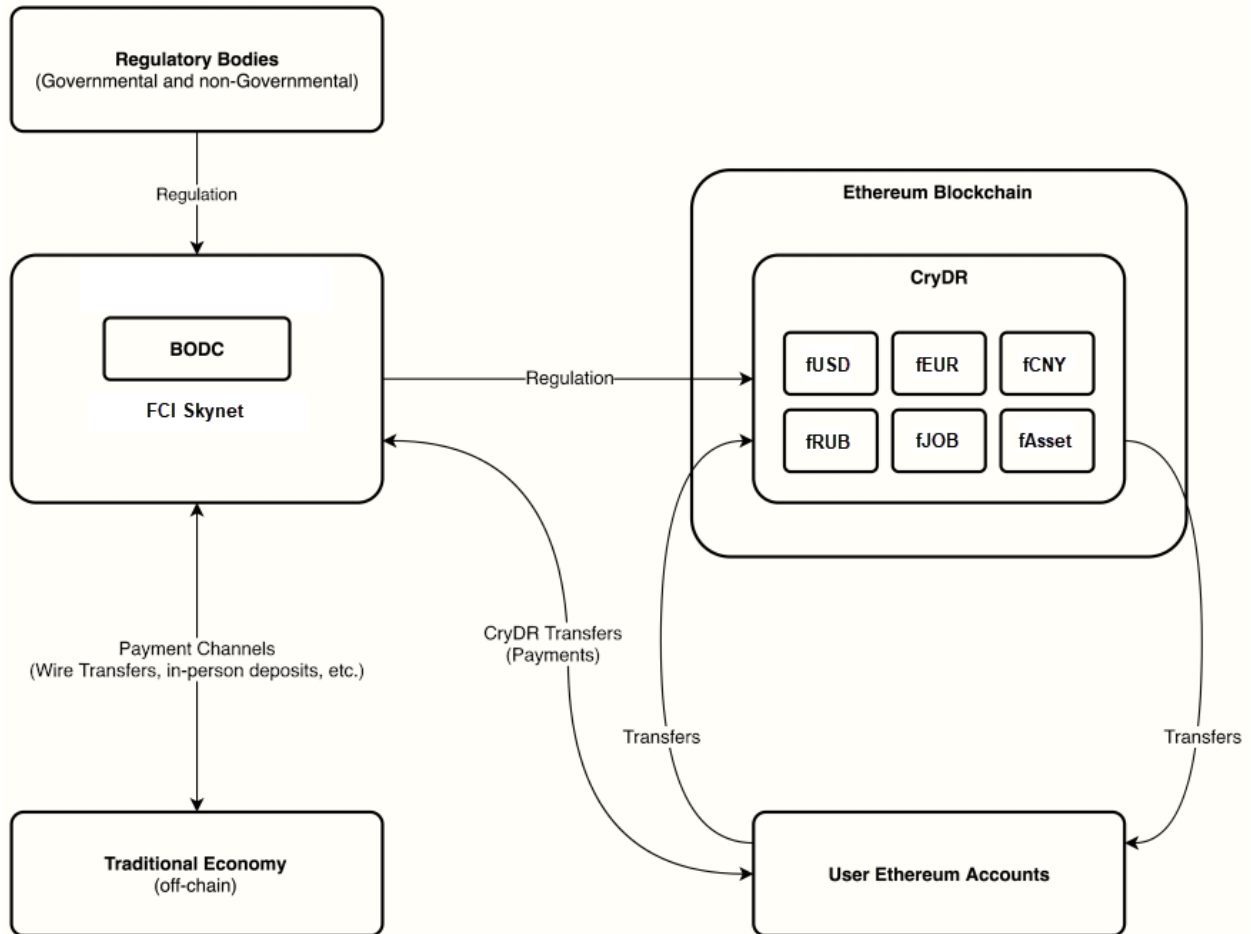


Figure 1. Crypto Depository Receipts - General Workflow

5.1.4 Helpers / Utils (Auxiliary Smart Contracts)

We will also need to create several auxiliary smart contracts to enable auxiliary functions such as switching between contracts running different versions and enabling additional API features. Their detailed description is beyond the scope of this document.

5.2 Offchain Infrastructure

In order to facilitate the widespread adoption of CryDRs as a transaction, investment and hedging tool, userfriendly libraries and code templates for application developers will be released.

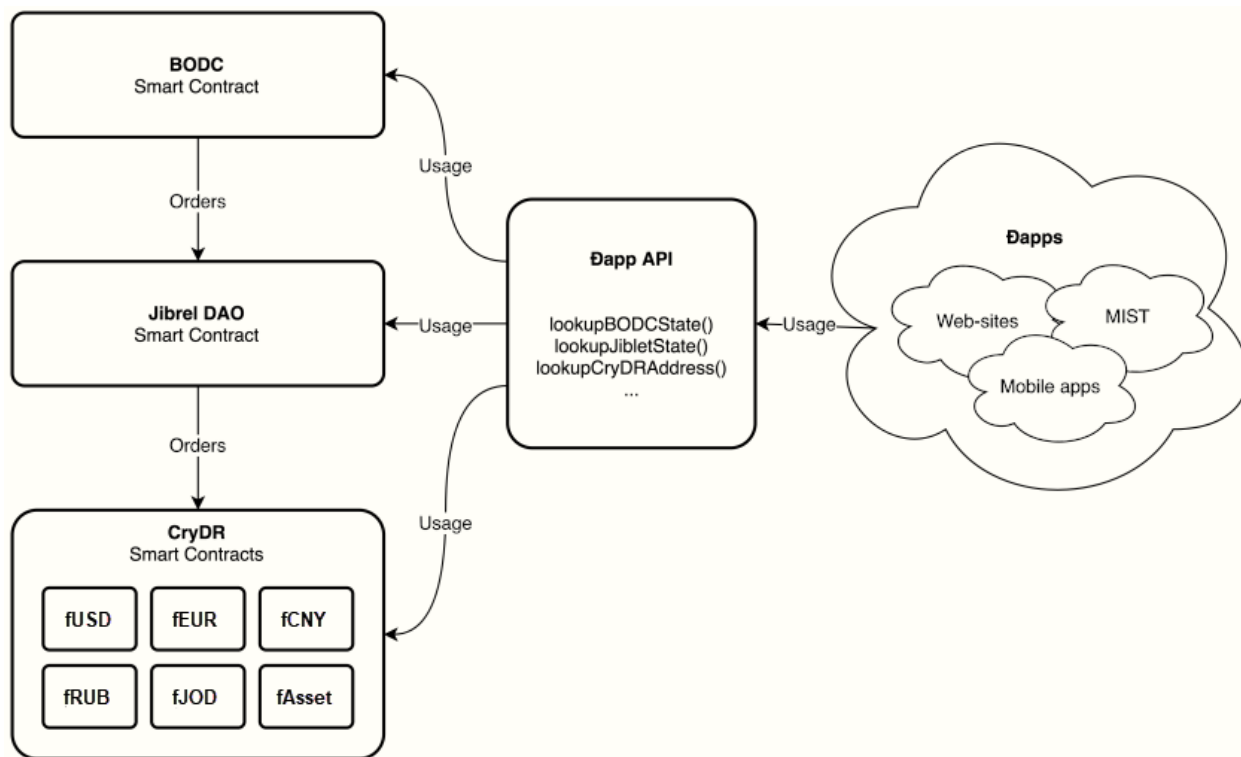


Figure 2. FCI Skynet DApp API Workflow

5.2.1 Libraries & Templates

We expect that developers will use existing libraries to interact with Ethereum Blockchain (for example, JS web3). We will release wrappers for this library and code samples that will simplify the interaction with the FDB and CryDR smart contracts.

5.2.2 CryDR Explorers

Opensource explorers will be created, allowing users to view CryDR

metadata and interact with the BODC as well as manually verify ownership of the underlying asset by the FDB.

5.2.3 Board of Director Toolkit

Tools will be created to interface the internal IT infrastructure of CryDR Ltd with Ethereum blockchain. In particular, for the organization of interaction of the members of the board of directors with BODC and for operative monitoring of the state of the system.

6. FULLY DECENTRALIZED OPERATIONS

In the short to medium term, off-chain activities will be needed to undertake the necessary legal and financial due diligence to convert physical assets to digital assets. In

addition, the BOD members will be needed to oversee the FDB to ensure full transparency and regulatory compliance.

In the longer term, it is expected that regulation will evolve to facilitate on-

chain verification of asset ownership, enabling FCI Skynet to become a decentralized autonomous organization.

6.1 Selfservice Portals

Once the technological limitations such as onchain computational capability and the feasibility of implementing complex zeroknowledge proofs [9]; as well as the regulatory hurdles of obtaining the relevant licensing, are overcome, FCI Skynet could operate self-service portals (i.e. traditional exchange platforms hosted onchain, communicating with the FCI Skynet network).

The buildout of these portals is critical to FCI Skynet achieving full decentralization.

6.2 Onchain Digital Identity / KYC / AML

While many onchain digital identity and KYC solutions exist today, they are limited in functionality. More advanced identification solutions will be required to achieve selfservice portals.

6.3 Board of Directors DAO

Once operations have reached steady state, the Board of Directors can be dissolved and replaced with an autonomous regulatory entity, charged with overseeing the operations of the FDB.

7. USECASES

Traditional assetbacked tokens that are easily exchangeable provides a wide range of usecases

7.1 Traditional / Digital Asset Exchange

By allowing traditional assets and digital assets to be freely traded between one another, a platform is inherently developed that facilitates lowrisk, high returns for institutional investors through the wholesale of traditional investment instruments to investors and entities seeking stable digital assets

7.1.1 Investment Platform

An investment bank can deposit money market instruments into the FDB and then sell those products (CryDRs) to decentralized organizations and funds at a

premium, benefiting from onchain / off-chain arbitrage.

7.1.2 Hedging Tokens

Decentralized Autonomous Organizations and funds can purchase money market CryDRs and store them onchain, with full transparency, reassuring investors that their funding is safe. Decentralized Autonomous Funds can choose from a wide range of traditional assets to complement their digital portfolios and protect against cryptocurrency downturns.

7.2 Global Transfers

By providing assetbacked tokens, the platform is able to provide tokens that possess all the desirable qualities of both, traditional assets in particular, stability

and global adoption, and digital assets immutability, ease of transfer and reliability.

With these tokens, payment gateways, remittance channels and other money transfer usecases can be implemented.

7.2.1 Remittances

FCI Skynet can enable remittances by enabling fiat to fiat transfers that use cryptoinfrastructure to execute transactions. Users can add funds and transfer them to anyone in the world, leveraging the low fees provided by digital currencies while still maintaining the stability, security and safety of traditional currencies.

7.2.2 Universal Wallet

Currency agnostic wallets can be created that allow users to freely convert between currencies and make transfers to anyone, anywhere in any currency,

without the exorbitant fees usually associated with such transactions

7.3 Crossborder

Payments Similarly, FCI Skynet can enable crossborder payments.

7.3.1 Currency API

With the underlying tokens, FCI Skynet can provide a currency API that allows users to convert freely between currencies.

7.3.2 Merchant API

FCI Skynet can provide merchants with a simple easy to use payment gateway that can accept payments in any currency and payout in the local currency. Without incurring exchange or transfer fees.

Once the network is established, merchants will be able to setup currency agnostic payment gateways using FCI Skynet's userfriendly libraries and API.

8. REFERENCES

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