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(b) you will and shall at your own expense ensure compliance with all laws, regulatory requirements and restrictions applicable to you (as the case may be);

(c) you acknowledge, understand and agree that Rowan may have no value, there is no guarantee or representation of value or liquidity for Rowan, and Rowan is not an investment product nor is it intended for any speculative investment whatsoever;

(d) none of the Foundation, the Distributor, their respective affiliates, and/or the Sifchain team members shall be responsible for or liable for the value of Rowan, the transferability and/or liquidity of Rowan and/or the availability of any market for Rowan through third parties or otherwise; and

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Sifchain: The Omni-Chain Decentralized Cryptocurrency Exchange Lite Paper

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Note: The contents of this document are subject to change.

Background

In 2019, $8.5 billion in cryptocurrency derivatives trading occurred per day for a total of $3 trillion in the year\(^1\). Most of this trading occurred on centralized exchanges even though cryptocurrency investors prefer decentralized exchanges because they can maintain standards of security, availability, reliability, and censorship resistance on a publicly verifiable blockchain.

A primary constraint for existing decentralized exchanges is that they limit investors to a small subset of blockchain ecosystems. Another constraint is that they are slow and charge high fees due to performance limitations of their underlying blockchain. To capture the full market, an omni-chain solution on a more performant blockchain is needed.

Sifchain is that solution. Built with the Cosmos SDK, Sifchain processes substantially more transactions per second than Ethereum, making it 100x more efficient than the current leading DEXes. Sifchain uses Thorchain as a reference implementation and uses pegged tokens to support a wide array of blockchains. Sifchain will support cross-chain transactions for 20-25 of the top blockchains such as Bitcoin, BinanceChain, Polkadot, and EOS. These blockchains represent the overwhelming majority of all cryptocurrency trading volume. In addition, Sifchain will support an on-chain governance process for developing additional pegged tokens for new blockchains as needed.

Hybrid Orderbook and CLP

Sifchain uses both an order book and a CLP for trade completion. Orders are placed with a commit-reveal scheme\(^2\) to circumvent front-running from validators. Committing a limit order will

\(^1\)TI-2019Cryptocurrency Derivatives Exchange Industry Annual Research Report-20200117

\(^2\)Commitment Scheme Generally speaking, this scheme is still vulnerable by either: (i) committing multiple transactions and selectively revealing only the profitable ones, or (ii) committing multiple transactions and selectively invalidating the unprofitable ones (not enough collateral, or proxy contract exception). However, we considered a transaction valid only if it was revealed within n blocks of being
committed. If $n$ is sufficiently small, traders will have nearly no time to selectively reveal. Require traders to actually transfer the value posted, regardless of whether or not it is revealed. Sifchain derives its internal asset price from its CLPs. One CLP is used for trades directly involving Rowan, two CLPs are used for all other trades. For example, the USDC:BTC internal price is calculated using the USDC:ROWAN and ROWAN:BTC CLPs.

Traders execute market orders (swaps) directly against CLPs immediately after placing them. Traders place limit orders by posting an on-chain transaction depositing their capital in whichever currency they prefer, along with the name of the currency they’d like to purchase and their requested price. When Sifchain’s internal asset price moves to a favorable range for a limit order, a CLP swap is executed so that the limit order is filled with an average price that does not exceed the trader’s requested price. This means limit orders may be partially filled.

The key benefit of the CLP is the fee structure, which is responsive to the demand for liquidity by market-takers. Prices inherit an inertia since large fast changes cause high fee revenue. As demand subsides, the fee paid decreases. This liquidity-sensitive fee penalises traders for being impatient. This is an important quality in markets, since it allows time for market-changing information to be propagated to all market participants, rather than a narrow few having an edge.

Sifchain supports conditional market and limit orders, including stop loss and take profit orders. It also supports amending limit orders that have been placed but not executed to enable trailing orders.

Sifchain prioritizes limit order execution based on the yet-fulfilled quantity of purchased tokens, not the time the orders are placed or the requested price. This allows CLP liquidity providers to maximize revenue and encourages traders to post trades that accurately reflect their market view. CLPs are expected to maintain accurate asset prices because any inaccurate asset price presents an opportunity for market makers to profit through arbitrage. However, traders are able to request oracle verification if they believe the internal asset price may temporarily deviate substantially from its external asset price. In such a case, orders will only be executed to the extent that the average price is within a specified range of the oracle price.

Sifchain enables liquidity providers to add liquidity into Sifchain’s liquidity pools where they can earn income proportionate to their services rendered without the constraints that other exchanges put on them. Liquidity providers are able to deposit any token Sifchain supports to the appropriate pool. They can add liquidity asymmetrically, meaning they can add only Rowan or only a token for any token pair. Liquidity providers can add or remove liquidity whenever they choose.

A “BetaNet” version of Sifchain will be released, which will have support for an ERC-20 standard compliant digital token on the Ethereum blockchain, and a native token on the Sifchain protocol. Users will be able to move Rowan back and forth from the Ethereum blockchain to Sifchain as often as they like.

3 Converging to Reference Prices
Rowan are designed to be consumed/utilised, and that is the goal of the Rowan distribution. In fact, the project to develop Sifchain would fail if all Rowan holders simply held onto their Rowan and did nothing with it. In particular, it is highlighted that Rowan: (a) does not have any tangible or physical manifestation, and does not have any intrinsic value (nor does any person make any representation or give any commitment as to its value); (b) is non-refundable and cannot be exchanged for cash (or its equivalent value in any other virtual currency) or any payment obligation by the Foundation, the Distributor or any of their respective affiliates; (c) does not represent or confer on the token holder any right of any form with respect to the Foundation, the Distributor (or any of their respective affiliates), or its revenues or assets, including without limitation any right to receive future dividends, revenue, shares, ownership right or stake, share or security, any voting, distribution, redemption, liquidation, proprietary (including all forms of intellectual property or licence rights), right to receive accounts, financial statements or other financial data, the right to requisition or participate in shareholder meetings, the right to nominate a director, or other financial or legal rights or equivalent rights, or intellectual property rights or any other form of participation in or relating to Sifchain, the Foundation and/or their affiliates or respective service providers; (d) is not intended to represent any rights under a contract for differences or under any other contract the purpose or pretended purpose of which is to secure a profit or avoid a loss; (e) is not intended to be a representation of money (including electronic money), security, commodity, bond, debt instrument, unit in a collective investment scheme or any other kind of financial instrument or investment; (f) is not a loan to the Foundation or any of their respective affiliates, is not intended to represent a debt owed by the Foundation or any of their respective affiliates, and there is no expectation of profit; and (g) does not provide the token holder with any ownership or other interest in the Foundation or any of their respective affiliates. Notwithstanding the Rowan distribution, users have no economic or legal right over or beneficial interest in the assets of the Foundation or any of their affiliates after the token distribution.

**Margin**

Traders are able to borrow liquidity from a CLP. This allows them to long cryptocurrency on margin, leveraging the value of the cryptocurrency they already own and increase their investment size. This enables traders to potentially magnify returns, assuming the value of the investment rises. Traders borrow the currency they’re using as collateral (for example, if a trader is using USDC as collateral, they will borrow USDC). Interest is set based on market demand and CLP supply. The borrow occurs when the trade is executed, not when it is placed.

After a trade with no margin occurs, the purchased tokens are released to the trader. However, after a trade with margin, the purchased tokens are held by the protocol. A trader can manage the position by placing and updating orders. To exit a position, they must sell all of the assets they purchased. At this point, their collateral is returned with adjustments for gains or losses.

A position can be liquidated if the price of an asset falls below a liquidation threshold. This liquidation threshold is a function of both the purchase price and the amount of margin used. Positions with less margin will have more favorable liquidation thresholds, all else being equal. As with spot traders, margin traders can decide whether to use Sifchain’ internal asset price or
an oracle’s external asset price for liquidation or orders related to their position.

Both borrowing and returning capital unbalances the CLP, making it profitable for arbitrageurs to fix. Thus, margin trading both provides a new revenue source for liquidity providers (lending) and increases the revenue from trading fees.

Rowan

The native digital cryptographically-secured utility token of Sifchain, the Rowan, is a transferable representation of attributed functions specified in the protocol/code of Sifchain, which is designed to play a major role in the functioning of the ecosystem on Sifchain and intended to be used solely as the primary utility token on the network.

Rowan is a non-refundable functional utility token which will be used as the medium of exchange between participants on Sifchain. The goal of introducing Rowan is to provide a convenient and secure mode of payment and settlement between participants who interact within the ecosystem of Sifchain, and it is not, and not intended to be, a medium of exchange accepted by the public (or a section of the public) as payment for goods or services or for the discharge of a debt; nor is it designed or intended to be used by any person as payment for any goods or services whatsoever that are not exclusively provided by the issuer. Rowan does not in any way represent any shareholding, participation, right, title, or interest in the Foundation, their respective affiliates, or any other company, enterprise or undertaking, nor will Rowan entitle token holders to any promise of fees, dividends, revenue, profits or investment returns, and are not intended to constitute securities in Singapore or any relevant jurisdiction. Rowan may only be utilised on Sifchain, and ownership of Rowan carries no rights, express or implied, other than the right to use Rowan as a means to enable usage of and interaction within Sifchain.

As described in this document, Rowan would also provide the economic incentives which will be consumed to encourage users to contribute and maintain the ecosystem on Sifchain, thereby creating a win-win system where every participant is fairly compensated for its efforts. Rowan is an integral and indispensable part of Sifchain, because without Rowan, there would be no incentive for users to expend resources to participate in activities or provide services for the benefit of the entire ecosystem on Sifchain. Given that additional Rowan will be awarded to a user based only on its actual usage, activity and contribution on Sifchain, users of Sifchain and/or holders of Rowan which did not actively participate will not receive any Rowan incentives.

Post-BetaNet, all protocol changes will be voted on by Rowan-holders and it is these community members which would drive development of Sifchain. In order to promote community governance for the network, Rowan would allow holders to propose and vote on governance proposals to determine features and/or parameters of Sifchain, with voting weight calculated in proportion to their token holdings. For the avoidance of doubt, the right to vote is restricted solely to voting on features of Sifchain; the right to vote does not entitle Rowan holders to vote on the operation and management of the Foundation, its affiliates, or their assets, and does not constitute any equity interest in any of these entities. It is envisaged that SifDAO (Sifchain's
Decentralized Autonomous Organization) will be deployed with Rowan as the governance token.

Computational resources are required for validating information / executing transactions on Sifchain, so validators providing these services / resources would require payment for the consumption of these resources by way of protocol emission (i.e. "mining" for block rewards on Sifchain) to maintain network integrity, and Rowan will be used to quantify and pay the costs of the consumed computational resources. As an indication of commitment to the system and service standard assurance, validators would be required to stake an amount of Rowan as security deposit before participating in mining in order to ensure service standards and prevent malicious behaviour.

Finally, as the native token of the Sifchain platform, Rowan would be used to settle various transactions within the ecosystem. Traders must directly or indirectly purchase Rowan to execute trades against CLPs, therefore ensuring that there is demand for the token for utility functions.

Underlying Architecture

As a Cosmos SDK blockchain, it uses the Tendermint consensus algorithm\(^4\) and will support the Cosmos Networks' Inter-blockchain Communication Protocol (IBC)\(^5\).

In many blockchain orderbook systems, cancellations and order updates are sensitive to suppression attacks such as intentional mempool spam from other traders. Validators would not accept totally nonsensical transactions, but attackers can still spam low-stakes transactions—e.g., calling a no-op function, or moving funds between wallets they own. Attackers would have the goal of getting the validators to fill blocks with these useless (but valid) transactions plus their profit-taking transaction, before an honest user’s other transactions such as order cancellations or order updates can get through.

Sifchain levels the playing field here by requiring that validators reorder all transactions in a block so that those with the highest transaction fees are processed first. This way, traders can post transactions for cancellations and order updates with substantially higher gas fees than the average transaction so that they are prioritized ahead of others (and so that the costs of spamming the mempool is prohibitively expensive for attackers).

\(^4\) What is Tendermint?
\(^5\) Inter-Blockchain Communication (IBC)

Cross-Chain Communication

Sifchain uses a two-way peg protocol which results in the swap of pegged tokens. For example,
a trade of LTC for TRX would be executed as transactions of pegged tokens (cLTC and cTRX) on a Cosmos SDK blockchain.

The technical architecture of each pegged token will differ depending on the blockchain but each will have some common infrastructure. Each source chain (for example, Stellar or Cardano) will have a specified peg chain (also known as a peg zone) in the Cosmos Network with its own validators separate from Sifchain. Sifchain can verify peg zone validators’ transactions through Cosmos Network’s IBC.

Peg zone validators must run a full node only for their peg zone blockchain and the blockchain to which they are pegged. For example, a Tezos peg zone validator only needs to run a full node for the Tezos peg zone and the Tezos blockchain. Peg zone validators can choose to validate multiple peg zones (the Cosmos Hub will likely be the peg zone for multiple blockchains) but this is not required.

**Perennial Permissionless Asset Listing**

Anyone can create a new CLP by pooling Rowan and a new token into a pool initialization transaction. The price of the new token will be set based on the amount of Rowan pooled. Sifchain will enforce a minimum CLP size, but multiple depositors can contribute to the creation of a single CLP.