MOLECULAR FUTURE
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PREFACE

Pitting against traditional systems we are used to today, various public blockchain projects have seen tremendous success over the years in improving accountability, connectivity, speed, transparency and privacy across just about every industry. We have seen specialized blockchain applications like Bitcoin (for payments), Monero (for privacy), and Ethereum (smart contract platform) which within its own protocol has enabled many distributed applications and projects such as Matic Network (for DApps) or Augur (for predictions) to thrive.

From a technological perspective, blockchain’s characteristic of immutability offers users transparency and fairness, giving assurance that users’ wealth is accurately accounted for. With the increasing popularity of digital asset transactions, the traditional financial industry is also beginning to play catch up and rapidly developing their infrastructure to include blockchain, signifying the increasing demand for a stable, efficient, and credible accounting and transaction system.

However, despite the rapid development of blockchain technology today, the global financial market is still dominating payments and transactions, with daily transaction amounts hitting the tens of trillions of dollars. There is still no real blockchain project in the field of finance that can replicate the complex infrastructure that supports a system of this scale; as such, the barriers to entry into this industry remains incredibly high. Since financial giants essentially monopolised this market, they determine the way users can manage their money, and they charge hefty fees every step along the way.

Fortunately, the advent and development of blockchain technology has levelled the playing field for people. Its ability to resolve the issues of trust and accountability has eliminated the need for third parties and allowed users to regain control of their assets. This is where Molecular Future sees an excellent opportunity to disrupt the market. As an early project that successfully transitioned from traditional finance to blockchain finance, Molecular Future firmly believes that traditional financial markets that rely on centralized trading and management is destined to be eliminated by decentralization. People need a more just, fair, efficient and transparent blockchain financial infrastructure to meet their financial service needs.

Molecule Future will be driven by its forward-looking demand for the market and the professionalism of its financial services to create a comprehensive financial public chain that offers users a better alternative to the traditional financial service system they are used to today.

In order to meet the growing needs of users, the Molecular Future financial public chain has been upgraded to the Mega Operation System (MOS), and its main technical framework is the classic Byzantine fault tolerant (BFT) consensus algorithm. MOS is based on the interconnection of multiple independent blockchains in the form of “domains” and operates with the BFT consensus algorithm as the core driving force. The main domain of MOS is defined as the Mega Domain, the central management system that enables domains to communicate with each other.

As the world’s first public blockchain project dedicated to financial services, Molecule Future has obtained the support and investments by well-known financial institutions such as HBCC Investments, Collintar Capital, Eagles Fund, China Fortune Holdings (0110.HK) and Molecular Group.
The development of the MOS public chain is deliberately designed to mitigate the shortcomings of the traditional finance world by combining financial services and products with blockchain technology. Molecular Future is committed to providing users with blockchain technology-related investment products, institutional-level market trading software, media information, project information database, communities and other financial service systems.

Molecule Future’s goal is to use its experience in the traditional financial industry and the blockchain field to successfully develop, provide users with on-chain, real-time trading and liquidity management services.
1.1 COMPLIANT DECENTRALIZED STOCK EXCHANGE

One of the main reasons why blockchain technology is hailed as a revolution that will change money, business and the world is its innate property of accountability and security that arises from being a mass-replicated, distributed ledger. To illustrate, every block on the blockchain has to be verified by nodes and every new block produced contains verified data of the previous block; a malicious hacker would not be able to simply change the data in a given block, the hacker would have to alter the entire blockchain to change any data, but that in itself is impossible as it will require too much computing power. In the same way, we can make exchanges less vulnerable to hacking by running the entire system on a blockchain. This is called a distributed exchange.

The industry has seen dozens of hacks on centralised exchanges throughout the years but why do users still choose to trade on these exchanges despite its security drawbacks? This is mostly because centralised exchange can provide greater liquidity since they can create deep orderbooks of limit orders. Naturally, exchanges that provide more liquidity will attract even more liquidity. For a decentralised exchange to compete with a centralised exchange, it would need to support deep orderbooks with limit orders. The issue is that many of the decentralised exchanges we see today requires traders to be online at the time of trade, which is why you see many decentralised exchanges with shallow orderbooks. Only a distributed exchange on a blockchain can allow users to submit orders and go offline; the blockchain matches and completes the trade on behalf of the trader.

<table>
<thead>
<tr>
<th>Features</th>
<th>Centralised Exchange</th>
<th>Decentralised Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety from hacks</td>
<td>No centralised exchanges are immune to hacks. Many exchanges have famously been hacked over the years</td>
<td>Lower risk because nodes are distributed all over the world</td>
</tr>
<tr>
<td>Risk of infrastructure</td>
<td>Depends on security mechanism of operators</td>
<td>Little to no risk since nodes around the world work round the clock</td>
</tr>
<tr>
<td>Privacy</td>
<td>Little privacy since strict KYC requirements are required</td>
<td>Very high level of privacy</td>
</tr>
<tr>
<td>Liquidity</td>
<td>High liquidity</td>
<td>Low liquidity due to immature products and inefficient trading mechanisms</td>
</tr>
<tr>
<td>Transparency</td>
<td>Low transparency; centralised exchanges do not publish operation and trading data</td>
<td>High transparency; all transactions are broadcasted on the chain</td>
</tr>
</tbody>
</table>
1.2 CUSTODY – OWNERSHIP OF OUR OWN ASSETS

Current financial markets and stock exchanges are all centralised. The main implication of a centralised exchange is that users’ assets and data are handled by a third party which acts as a custodian. For example, the New York Stock Exchange uses a third-party custodian to manage the investors’ assets. This has several drawbacks. Firstly, investors are not in control of their assets. This means that their assets can be frozen or blocked without consent – this has happened on many occasions, resulting in huge losses for the investors. Secondly, these assets being in the control of one central entity makes it an attractive target for hackers. Over the years, investors have lost money as well as exposed their private information because of hacks. With the development of blockchain technology, investors regain control of their own assets and cut out an unnecessary middleman that charges hefty fees and are vulnerable to hacks and mismanagement.

This also presents an opportunity for the custodian market to be disrupted. The top 400 global financial asset managers cumulatively manage a total of US$73.8 trillion in assets in 2019. Custodian fees typically fall between 0.1% to 0.15% of assets under management, that is approximately US$70.0 to 100.0 billion in custodian fees paid to third parties every year; a sizeable market that is very likely be made redundant when blockchain technology achieve mainstream adoption.

1.3 FASTER, CHEAPER AND MORE RELIABLE TRADING

The finance market is notoriously volatile where profits or losses are determined in seconds and traders who gain early access to crucial information will have an edge over the less informed. Over the years, issues regarding transparency have come into question as cases of information asymmetry emerge. A report from the Wall Street Journal had found that professional money managers who are using the paid version of Electronic Data Gathering, Analysis and Retrieval system (EDGAR) have been able to get access to market-moving documents before free users. These delays in information distribution ranged from no delay to lasting more than a minute, giving traders some extra time to act on the news before others.

An obvious advantage of blockchain technology, especially in the field of finance, is the transparency it guarantees. For one, discounting other variables such as internet speed, any information on the blockchain will be available for interested parties to view at the same time; with a timestamp on the block as proof of when it was made available. This innovation will undoubtedly change the way the financial system disseminates information.

The use of blockchain on the stock market extends beyond just improved information symmetry, it can also significantly decrease the counter-party risk in trading. Currently, stock markets use what is known as the Delivery versus Payment (DVP) system, The DVP is a securities industry settlement method that guarantees the transfer of securities only happens after payment has been made. The bonds and securities market we are familiar with today employs the DVP method using custodians. The system requires these third
Since the advent of bitcoin in 2009, the cryptocurrency market has seen rapid growth over the years. Although compared with the traditional stock and securities market that has decades of development history, the cryptocurrency market is still in the early stages of development. According to Forbes, as of September 2019, the market value of the NYSE alone has reached 28.5 trillion USD, while the entire cryptocurrency market is only valued at about 200 billion US dollars.

1.4 MARKET VALUE COMPARISON

The transfer of the asset takes place in a different system from the payment system, as such, there exists counter-party risk due to defaults or frauds. Blockchain however, solves this problem amicably. The idea being that using smart contracts, sellers can deposit an asset onto the system and the buyer will deposit the payment amount; once it has been shown that the terms and conditions are met, the smart contract will automatically execute the trade without the risk of any party defaulting. Using this system, exchanges will be able to cut down what usually takes three days for trades to settle, to mere minutes or even seconds. This is especially important in complex derivatives markets where market conditions can change drastically before a trade is settled. This could result in potential costs savings of between 50% to 80% for processing and bookkeeping.

However, the issue is that this only works when both the assets and the payment currency operate on the same network (e.g. Ethereum). The reality is that most chains do not have cross-chain capabilities. This is where Molecular Future has an advantage over other public chains. Molecular Future’s MOS system fully supports cross-chain capabilities and is deliberately built in a way that allows new blockchains to integrate into the system in the future. This means that new forms of chains can be included to be compatible with the MOS, bringing greater liquidity for users of the Molecular Future’s platform. Users can also also choose from the many tribes on the network depending on the quality of their service, such as user experience, settlement speed and transaction costs. Tribes on the other hand, will compete to provide the best service. This will ultimately result in lower transaction, settlement and transfer fees for users.
Both the cryptocurrency market and the stock securities trading market have primary and secondary markets that share similar functions. In the secondary market, the cryptocurrency market has various types of centralized and decentralized digital currency exchanges. The traditional financial market on the other hand, has a large number of order-driven stock exchanges. The cryptocurrency market has vanilla over the counter (OTC), and the traditional financial market has brokered OTC. In recent years, the cryptocurrency market has also been able to develop contract trading and pledged mining similar to derivatives and fixed income that traditional markets offer.

Although there are many similarities, the traditional financial market has developed substantially for over 100 years since its inception. The cryptocurrency market however, had only been established a little more than 10 years ago. There of course is a lot of potential for the industry but given the limited amount of exposure it gets and the lack of capital injection to develop its infrastructure, the markets remain immature. The biggest issue that arose from the market’s immaturity is the lack of liquidity. Good liquidity is essential for the development of cryptocurrencies.

For cryptocurrency traders, markets that are liquid are preferred because it means they can convert between assets and cash quickly, enabling them to adjust to any market changes effectively. Furthermore, high liquidity attracts even more liquidity.

However, factors such as a small market size, insufficient trading depth, few types of trading pairs, and restricted fiat conversion avenues has made trading unattractive for many, making it even more difficult to increase liquidity for the market.

Take the types of assets and trading pairs available for example. In the traditional financial market, the NYSE alone has more than 2,800 companies’ securities listed for trade. In contrast, the top exchanges in the cryptocurrency market such as Binance, Huobi, and OKEx have between 160-230 cryptocurrency projects and about 570 trading pairs available to trade. Both the types of assets and trading pairs available for trade cannot be compared to that of the traditional market.

To take advantage of this opportunity, Molecule Future will launch a cryptocurrency liquidity management system that provides users with comprehensive liquidity management services including spot transactions, contract transactions, data analysis, cryptocurrency financing, brokerage and crypto asset management.
Molecule Future is committed to creating a global one-stop digital asset investment service platform that applies blockchain technology to develop quality financial products and services.
2.1 MOLECULAR ASSET MANAGEMENT

Molecular Asset Management is a fully user-ready function available on MOF’s application. It currently offers more than 30 fixed deposits, current deposits, hedge funds and quantitative funds. Users can use the three major currencies BTC, ETH and USDT to invest in these funds.

One of the advantages of Molecular Asset Management is the ability to tailor investment plans based on the needs of users. Molecular Asset Management categorises products in a modular and meticulous manner. Whether an investor is conservative or aggressive, he or she can flexibly choose from a variety of strategies and invest using different cryptocurrencies. In a general sense, Molecular Asset Management can be seen as a cryptocurrency asset management supermarket.

In order to serve users to the greatest extent, Molecule Future has launched nine hedge funds and quantitative funds, all which have achieved positive returns. Since June 2018, six of the hedge funds have completed settlement by the first half of 2019. The lock-up period of these six hedge funds is 3 months, and the average annualized return is close to 50%.

<table>
<thead>
<tr>
<th>Fund Name</th>
<th>Date of inception</th>
<th>Lock-up period</th>
<th>Annualised Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethereum Innovation Hedge Fund No. 1</td>
<td>2018.7.2</td>
<td>3 months</td>
<td>80%</td>
</tr>
<tr>
<td>Bitcoin Innovation Hedge Fund No. 1</td>
<td>2018.7.26</td>
<td>3 months</td>
<td>50%</td>
</tr>
<tr>
<td>Ethereum Innovation Hedge Fund No. 2</td>
<td>2018.11.3</td>
<td>3 months</td>
<td>48%</td>
</tr>
<tr>
<td>Ethereum Innovation Hedge Fund No. 3</td>
<td>2018.12.18</td>
<td>3 months</td>
<td>48%</td>
</tr>
<tr>
<td>Bitcoin Innovation Hedge Fund No. 2</td>
<td>2019.1.7</td>
<td>3 months</td>
<td>28%</td>
</tr>
<tr>
<td>Ethereum Innovation Hedge Fund No. 4</td>
<td>2019.2.26</td>
<td>3 months</td>
<td>30%</td>
</tr>
</tbody>
</table>
In order to ensure the safety of users’ assets, the Molecular Future team has designed a set of risk monitoring mechanisms. Strict risk control and audit indicators are implemented for all funds before they go online. The investment team can only trade but cannot withdraw any funds from the system. The users’ investments are kept via joint multi-signature accounts between Molecular Future and its partner exchanges (such as OkEX and Hoo) in order to fully protect - users.

In addition, all the hedge funds listed on Molecular Asset Management have a high level of flexibility. Compared with the longer lock-up periods of most cryptocurrency funds, the lock-up period of MOF’s hedge funds is only 90 days. Investment strategies are deliberately formulated to achieve maximum returns in 3 months yet ensuring reasonable liquidity for investors.

Users of the Molecular Future platform are also entitled to discounts if they employ services on the platform using MOF tokens. The service fee for fund exits currently stands at 30% of profits if the funds’ native currency is used, but if users opt to use MOF tokens to pay for the service fee, the service-fee will only be 15% of profit, and must be paid in an equivalent amount in MOF. In the future, MOF tokens will be used to pay for various services on the platform. For example, if users or institutions want a particular project to be listed, a service fee has to be paid using MOF tokens to the development team to perform the integration of the project into the MOS system.

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Crowdfunded?</th>
<th>Investment Period</th>
<th>Settlement Method</th>
<th>Admin Fee</th>
<th>Redeem Fee</th>
<th>Payment Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Proposal</td>
<td>Yes</td>
<td>6 months</td>
<td>T+3, Interest and 2%</td>
<td>/</td>
<td>/</td>
<td>Reduces after principal and fees paid</td>
</tr>
<tr>
<td>Hedge funds</td>
<td>Yes</td>
<td>90 days</td>
<td>T+3, Interest and 2%</td>
<td>/</td>
<td>15%</td>
<td>MOF tokens paid</td>
</tr>
<tr>
<td>Abnormal investments</td>
<td>No</td>
<td>90 days</td>
<td>T+3, Interest and 2%</td>
<td>/</td>
<td>Unperformed</td>
<td>Reduces after principal and fees paid</td>
</tr>
<tr>
<td>Hedge Fund</td>
<td>Crowdfunded</td>
<td>120 days</td>
<td>Announced return 0%</td>
<td>/</td>
<td>15%</td>
<td>MOF tokens paid</td>
</tr>
</tbody>
</table>
2.2 CRYPTOCURRENCY FINANCING – MOLECULAR LENDING

Molecular Lending is another major function available in the Molecular Future application. The main aim of Molecular Lending is to provide a loan service that allows users to obtain loans with minimal requirements and favourable terms and conditions. At present, Molecular Lending supports lending of mainstream cryptocurrencies such as BTC and ETH.

The booming blockchain industry has enabled a deeper exploration of the financial attributes of cryptocurrencies. Long-term financial services such as lending, fixed deposits, and custody have gradually replaced short-term speculation of the market. Molecular Lending intends to build a lending system that enables cryptocurrency holders who do not wish to sell their cryptocurrencies an avenue to borrow funds by mortgaging their digital assets.

The cryptocurrency market is renowned for its volatility, and while that brings great opportunities, investments are also riskier. Molecular Lending hopes to help users control risk by offering loan services to individual cryptocurrency holders.

In order to improve the user experience, Molecular Future will also implement a Consumer to Consumer (C2C) segment where users can post their lending or borrowing requests. The system will help to match these requests, providing users with OTC-like functions. Users will also be able to directly use bank cards, Alipay or WeChat payment to conduct transactions.

In order to better ensure the security of user assets and ensure the smooth execution of loans, Molecular Future will introduce a liquidation mechanism in the lending segment in the future. For example, after depositing BTC as collaterals, the user will receive a loan equivalent to 70% of total amount of collaterals. Through the use of a margin formula which will be described in detail later, a liquidation ratio is set. If the price of Bitcoin falls below a certain level, the system will automatically liquidate the loan. Users can choose to maintain the loan by depositing more collaterals until a safe level is reached. If the user chooses to close its position or if there is an automatic liquidation, the loan will be settled directly according to the current assets’ prices.

MORTGAGES AND LOANS INTRODUCE
The lending process is as follows:

1. Step 1: The holder (borrower) initiates a loan application on the lending platform;
2. Step 2: The borrower transfers the digital currency to the wallet address specified by the platform;
3. Step 3: Loan amount is made available to borrower;
4. Step 4: If the value of the collaterals falls below a certain level (risky), the platform will require the borrower to increase the amount of collaterals. If no action is taken and the value of the collaterals falls to the liquidation level, the platform will automatically liquidate the loan;
5. Step 5: If no liquidation occurs, the borrower must return the principal plus a certain amount of MOF tokens as service fee at the end of the loan term;
6. Step 6: After the platform receives the full amount (including the principle and service fee), it will unlock the collaterals to the borrower. A fee of 0.3% will also be incurred as a handling fee. At this point, the mortgage loan process ends.

The margin calculation formula is as follows:

\[ c_{a^p} = pr^c_i - c_{1^p} \]

- \( c_{a^p} \) value of collateral that needs to be added to remain at a safe level
- \( pr \) is the mortgage ratio (not less than 150%)
- \( c_i \) Value of the loan (70% of the value of the collateralised cryptocurrencies)
- \( c_{1^p} \) Current value of collateralised cryptocurrencies

Note: This formula is the basic formula for margin calculation. The actual calculation will consider more variables, so it may be more complicated, but the core content is unchanged.

Case Show:

User A deposits 10 BTC on the lending platform as collaterals and chooses to borrow for 3 months. At this time, the current price of BTC is $10,000. User A can obtain a loan of 10 * 10,000 * 70% = 70,000 USD from the platform.

If the price of BTC rises to US$15,000 after 3 months, then the total value of BTC of User A on the platform will be US$150,000. User A can choose to return the borrowed US$70,000 to the platform, and pay the corresponding service fee and handling fee to withdraw the 10 BTC that is now valued at US$150,000.

If the price of BTC drops to USD 9,000, which is below the liquidation level, User A will need increase the collaterals to ensure that the loan is not liquidated. Currently, the actual mortgage rate of user A’s mortgage becomes \((9,000 * 10) / (10 * 10,000 * 70%) \approx 129\%\), which is lower than the healthy mortgage rate of 150%, so the amount of margin that the user needs to pay is 150% * 10 * 10,000 * 70% * 9,000 * 10 = 15,000 USD.
Molecular Lending is a more convenient and safe way to effectively solve the problem of short-term capital needs for users. It also provides a variety of financing possibilities for the currencies held by users. The mortgage escrow method of the cryptocurrencies is transparent, users can see every transaction of their assets; the entire borrowing and mortgage process is fully automated and supervised by the system.

In order to increase the liquidity of the platform and to provide users with more options, the platform will support more currency types in the future.

For individual holders, when there is a strong upward or downward trend in the price of digital currencies, users can hedge their risk through loans. For users who have idle funds in their hands, they can offer quick loans to earn some passive income.

Molecular Lending is a more convenient and safe way to effectively solve the problem of short-term capital needs for users. It also provides a variety of financing possibilities for the currencies held by users. The mortgage escrow method of the cryptocurrencies is transparent, users can see every transaction of their assets; the entire borrowing and mortgage process is fully automated and supervised by the system.

In order to minimise risks, when users’ assets are collateralised, these assets are placed in independent cold wallets and an independent address. The separation of hot and cold wallets provides a more secure asset protection mechanism.
In the future, Molecular Lending will also include a lending service that caters to businesses as a part of its plan to offer one-stop solutions to everything finance in the cryptocurrency industry. The first step to start offer business solutions is to provide an efficient and convenient financing platform for high-quality projects in the blockchain industry.

At present, the blockchain market is seeing a good growth momentum with many high-quality projects emerging in the market. Many of these projects have financing needs in order to develop and expand their business. They can come onto the MOF platform to source for loans.

In order to minimize the risk, Molecular Future will monitor the fluctuation of the price of the project’s tokens in real time. In the case that liquidation is triggered, the safety of the lender will be guaranteed in a timely manner. Molecular Lending aims to help outstanding projects in the same industry develop together and jointly promote the development of the blockchain industry.

### 2.3 LIQUIDITY MANAGEMENT

#### 2.3.1 Prospects of Molecular Liquidity Management Business in the Future

Lack of liquidity is a long-standing issue in the cryptocurrency trading market. Take the demand for liquidity management business of cryptocurrency trading platform as an example. From the data of Coinmarketcap, it can be seen that in terms of 24-hour trading volume, even the well-known platforms such as Binance, Huobi, OKEx or ZB do not come close to the top 3 exchanges. Let alone smaller exchanges (the bottom three in the figure below) and those that have not entered the top 100 ranking in Coinmarketcap (data as of December 8, 2019).

Undoubtedly, with the continuous development of the cryptocurrency market, the number of trading platforms and the number of cryptocurrencies will also continue to expand. According to data from feixiaohao.com, at present, the number of trading platforms that have been included on feixiaohao.com has reached 488, and as many as 5091 different cryptocurrencies. However, aside from well-known trading platforms such as Binance and Huobi, most exchanges see little to no volume. In recent years, even platforms as big as Binance, Huobi and OKEx have not seen good liquidity.
It is clear that liquidity management has become a key factor for all exchanges. However, as the entire cryptocurrency market has yet to scale, the industry will require more players to enter.

In the traditional financial market, Goldman Sachs Group, as one of the largest brokers, has a total market value of USD 933 billion in 2018 and a total revenue of USD 36.616 billion in 2018 (Goldman Sachs Group Annual Report 2018 data). Considering that the market value of the NYSE in September 2019 was as high as 28.5 trillion U.S. dollars, while the market value of the entire cryptocurrency was only about 200 billion U.S. dollars, a horizontal analogy can be drawn. In the same way, a multi-billion-dollar brokerage business in the cryptocurrency industry will also be needed to fill the “gap” in the market. Molecular Future intends to seize this opportunity to enter the liquidity management sector and gain a first-mover advantage.

**ADMINISTRATION**

**BUSINESS PROSPECTS**
2.3.2 Liquidity Management Business

In order to protect users, Molecular Future’s professional quantitative team will monitor and manage the liquidity on all the exchanges where MOF is listed. MOF crypto-token native to the Molecular Future platform is used for a variety of services and is currently listed on renowned exchanges such as OkEx and Fcoin.

The traditional financial industry generally chooses Black-Scholes pricing model, binary tree pricing model and Monte Carlo simulation for option pricing. The pricing model adopted by the Molecular Future’s quantitative team takes into account the two main models of Black-Scholes pricing model and binary tree pricing model.

**Binary tree pricing model**

Binary tree option pricing model and Black-Scholes option pricing model are complementary methods. The binary tree option pricing model is based on a basic assumption, that is, within a given time interval, the price movement of the security has two possible directions: up or down. Although this assumption is very simple, since a given time period can be subdivided into smaller time units, the model is suitable for processing more complex options.

However, the above pricing model is mainly applicable to the traditional stock and securities markets. Therefore, Molecular Future will also fully consider pricing models that can be applied to the cryptocurrency market in the future. HackerNoon, a well-known blockchain rating and data consulting agency, pointed out [4] that the three-stage price derivation, modified three-stage price derivation, and Silicon Methodology are important in obtaining the fair value of cryptocurrencies.

**Black-Scholes Pricing Model**

The Black-Scholes model is based on the principle of no arbitrage, which is simply that there is no risk-free arbitrage opportunity in the market: if any two assets have equal cash flows at any time in the future, their current prices must be equal.

$$C = S \cdot N(d_1) - e^{-r \cdot T} \cdot L \cdot N(d_2)$$

$$d_1 = \frac{\ln(S/L) + (r + 0.5 \cdot \sigma^2 \cdot T)}{\sigma \sqrt{T}}$$

$$d_2 = d_1 - \sigma \sqrt{T}$$

$C$: Initial reasonable price
$L$: Delivery price;
$S$: the current price of the financial assets being traded;
$T$: validity period;
$r$: continuous compound interest rate risk-free interest rate;
$\sigma^2$: annualized variance;
$N():$ Cumulative probability distribution function for normally distributed variables.

**Three-stage derivation**

Three-stage derivation is the most basic method for cryptocurrencies to obtain fair value. This derivation method first calculates the weighted average price of bitcoin (weighted by transaction volume) through the price of all bitcoin / fiat transaction pairs. Secondly, it lists the cryptocurrency pairs involving Bitcoin or fiat. Using the weighted average price of bitcoin calculated in the first step, we can further derive the weighted average price of other listed cryptocurrencies (weighted by the transaction volume). Finally, we can calculate the price of other cryptocurrencies that do not have a USD value. For cryptocurrencies, the cryptocurrency USD price calculated in the previous step is used as the reference price to calculate the USD prices of these crypto assets.
Each step of the method is highly dependent on the calculation of the transaction price in the previous step, and all calculations are based on the calculation of the Bitcoin USD price.

**Adjusted three-stage derivation**

Adjusted three-stage derivation is another pricing mechanism that is more comprehensive and more accurate than its predecessor. Since the adjusted three-stage derivation is consistent with the first two steps of the three-stage derivation, the first step and the second step are omitted. In the third step, the BTC price is fixed, and using other available trading pairs, the cryptocurrency price in the previous step is recalculated, and the revised reference price is obtained. We then calculate the prices of the remaining cryptocurrencies; and repeat the above steps until all listed cryptocurrencies have obtained the corresponding USD prices and all trading pairs are included in the calculation.
In the revised three-stage derivation process, more niche transaction pairs were covered, and the prices of each cryptocurrency were repeatedly calculated in the process, which should help reduce bias and increase reliability.

### Adjusted three-stage derivation CASE

Assume the following trading pairs: BTC/USD, ETH/BTC, ETH/USDT, LTC/BTC, LTC/USDT, LTC/ETH, MOF/ETH, MOF/LTC

1. **Step 1:** First use BTC / USD to get the BTC price;

2. **Step 2:** Then get ETH and LTC prices through ETH / BTC, ETH / USD and LTC / BTC, LTC / USDT;

3. **Step 3:** Include the ETH USD price obtained in the previous step into the equation and obtain the LTC USD price and the LTC / ETH USD trading volume. Recalculate the average LTC USD price using three sets of trading pairs, and then apply the LTC found in step 2. The USD price (or the latest calculated LTC price) is incorporated into the LTC / ETH equation, and the ETH USD price and new transaction volume of the LTC pair are obtained;

4. **Step 4:** Calculate the price of EOS;

5. **Step 5:** Recalculate ETH and LTC prices;

6. **Step 6:** Calculate the MOF price.

### All trading pairs:

BTC/USDT, ETH/BTC, ETH/USDT, LTC/BTC, LTC/USDT, LTC/ETH, EOS/ETH, EOS/LTC, MOF/EOS

<table>
<thead>
<tr>
<th>Used trading pairs</th>
<th>Unused trading pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: Get BTC price</td>
<td>BTC/USD</td>
</tr>
<tr>
<td>Step 2: Get ETH and LTC price</td>
<td>ETH/BTC, ETH/USDT, LTC/BTC, LTC/USDT</td>
</tr>
<tr>
<td>Step 3: Revise ETH and LTC price</td>
<td>LTC/BTC, LTC/USDT, LTC/ETH, EOS/ETH, EOS/LTC</td>
</tr>
<tr>
<td>Step 4: Get EOS price</td>
<td>EOS/ETH, EOS/LTC</td>
</tr>
<tr>
<td>Step 5: Revise ETH and LTC price</td>
<td>LTC/BTC, LTC/USDT, LTC/ETH, EOS/ETH, EOS/LTC</td>
</tr>
<tr>
<td>Step 6: Get MOF price</td>
<td>MOF/EOS</td>
</tr>
</tbody>
</table>
The Silicoin Methodology

Silicoin Methodology mainly calculates the price of each token traded on that platform for each trading platform. After selecting a trading platform, the calculation should start with the best trading pair in the platform, that is, those trading pairs that require the least transaction procedures and the largest trading volume.

For a cryptocurrency trading platform that has not opened fiat currency trading, you can anchor all the remaining cryptocurrencies to a mainstream cryptocurrency (such as BTC), and then calculate the total transaction volume of all cryptocurrencies in the trading platform, and then calculate the weighted average price of all cryptocurrencies in the market (weighted by transaction volume).

Assume that there are the following trading pairs in a cryptocurrency trading platform called Exchange A: XYZ/BTC=ρ1, XYZ/ETH=ρ2, and use PBF and PEF to calculate the XYZ price: XYZ/BTC=PBF*ρ1, XYZ/ETH=PEF*ρ2. Based on the USD fiat transaction prices of BTC and ETH in other trading platforms, calculate the USD fiat prices of BTC (PBF) and ETH (PEF)

Step 1: Obtain Exchange A’s latest price of every currency and their 24-hour trading volume
Step 2: Calculate the USD price and trading volume of every currency on Exchange A
Step 3: Use the below formulas to calculate the weighted average price of XYZ (weighted by transaction volume):

\[
VWAP = \sum(WAa \cdot Pa)
\]

\[
WAa = Wa \cdot adja
\]

\[
Wa = Va / \sum(Va)
\]

Pa: Price of a cryptocurrency in Exchange A
Va: Total trading volume of the selected cryptocurrency on Exchange A
WAa: Adjusted weighted trading volume of Exchange A
adja: Weight adjusted trading volume of Exchange A
Wa: None weighted trading volume of Exchange A
Sum(Va): Total trading volume of selected currency across all exchanges
Compared to the three-stage derivation and the revised three-stage derivation, the Silicoin Methodology focuses more on the performance of each cryptocurrency on various platforms, and to a certain extent, can better reflect the weighted average price of a specific currency. However, if the same trading pair of different trading platforms is introduced as the reference price, calculations can lead to large deviations in prices due to market friction.

The Molecular Future Quantitative trading team has considered the above three methods and found that the use of a proprietary artificial intelligence programme to derive prices yielded the most accurate results. The AI calculation is more systematic and can automatically retrieve data from the web to be inputted as factors that affect the price. In MOF Liquidity Management business, the Molecular Future team comprehensively considers factors such as the bid-ask spread, the total order size, the order duration, and the weight adjusted prices of specific trading pairs in order to ensure that MOF remains fairly valued.

The liquidity management business is one of the main businesses that will be launched in the future. Its purpose is to improve the liquidity of the currency, help users obtain sufficient transaction depth, optimal bid / ask prices, and ultimately ensure the smooth completion of transactions.

Molecule Future has a mature quantitative team and has extensive experience in digital asset management. It can implement pricing analysis, quotation analysis, trading strategy adjustment, and hedge fund trading.

2.4 ESTABLISH A BLOCKCHAIN INDUSTRY ECOSYSTEM

Molecular Asset Management will provide users with digital asset management services while Molecular Lending will help users take on loans. Molecular Future will also establish a new type of blockchain decentralised community that shares community information together.

Use of MOF in various aspects

- Asset Management Fee Discount
- Pre-payment fee
- Community Experience
- MOS connection service fee discount
Asset management discount

The average performance fee (redemption fee as mentioned earlier) of cryptocurrency funds is at about 30%, not including the 1.8% management fee annually. However, if currency investors use MOF to pay the performance fee, they will get a 50% discount.

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Crowdfunded?</th>
<th>Investment Period</th>
<th>Settlement Method</th>
<th>Admin Fee</th>
<th>Redemption Fee</th>
<th>Payment Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Deposit</td>
<td>No</td>
<td>No limit</td>
<td>1+1</td>
<td>1.1%</td>
<td>1.8%</td>
<td>Redeem after principle and fees paid</td>
</tr>
<tr>
<td>Fixed Deposit</td>
<td>Regular</td>
<td>1-12 months</td>
<td>1+1</td>
<td>1.1%</td>
<td>0.08% of investment capital, or 0.02% using MOF</td>
<td>Monthly redemption</td>
</tr>
<tr>
<td>Segment 1 7 days</td>
<td>No</td>
<td>1-7 days</td>
<td>1+1</td>
<td>1.1%</td>
<td>0.08% of investment capital, or 0.02% using MOF</td>
<td>Redeem after principle and fees paid</td>
</tr>
<tr>
<td>Hedge Fund</td>
<td>Crowdfunded</td>
<td>50 days</td>
<td>Annualized return fluctuates</td>
<td>/</td>
<td>10% of profits, if using CTM or 15% of using MOF</td>
<td>Redeem after principle and fees paid</td>
</tr>
</tbody>
</table>

User mutual assistance Q & A

Molecular Future will build a Q & A community in the future. Users can ask questions and offer a "reward" for people who can answer. Reward will be offered by the user who raised the question.

Investment experience sharing

The molecular future community is committed to providing users with a decentralized communication environment. Therefore, Molecular Future will create a community sharing section for users in the future. Sharing content can include project analysis, price trends, token technology, and so on. Other users can comment on the content by giving “Likes” or providing feedback. Likes can increase the reputation of content creators, take them to a higher level, and even tokenize their reputation.

KOL column

High-profile users can eventually become KOLs in the section and create columns to share information with more users. Ordinary users can spend MOF to view the latest publications by these KOLs. Molecular Future will also invite KOLs from the industry to join the community in the future to provide users with valuable insights.
At present, with the combination of Molecular Asset Management, Molecular Lending, the community forum as well as the decentralised exchange EXN, Molecular Future has developed a healthy financial services ecosystem where users can come to employ services that meet their needs. Molecular Future intends to continue to develop the ecosystem, break geographical barriers, and build the world’s first digital currency financial infrastructure that mirrors that of the traditional financial system.

**Portfolio sharing**
Molecular Future will create a portfolio tracking zone in the future where users can choose to disclose their own portfolios and other users can choose to follow. If the user who tracks the portfolio made positive returns, a portion of the returns will be distributed to the owner of the portfolio.

At present, with the combination of Molecular Asset Management, Molecular Lending, the community forum as well as the decentralised exchange EXN, Molecular Future has developed a healthy financial services ecosystem where users can come to employ services that meet their needs. Molecular Future intends to continue to develop the ecosystem, break geographical barriers, and build the world’s first digital currency financial infrastructure that mirrors that of the traditional financial system.

### 2.5 TOKEN ECONOMY

A successful token economy should reinforce and build desirable behaviours in the ecosystem. For example, for mining-centric blockchains such as bitcoin, to form the consensus in the blockchain, it requires miners to validate transactions. Token Economics is the mechanism to incentivise these miners to compete to provide better service on the network.

MOF will generate a total of 100 million (100 000 000) tokens for the project, of which 50% will be reserved for the community, 35% held by the Foundation and 15% by the MOF Team. This mechanism facilitates a healthy initial phase of development and adoption where tokens are circulated widely, followed by a consolidation of tokens by various stakeholders of the ecosystem such as super tribes and community representatives.

- **Token Distribution** -

![Token Distribution Chart]

- Community
- Foundation
- Founding Team
In order to realise the Molecular Future’s vision, the Molecular Future technical team has designed a comprehensive public chain that boasts high security, transparency, network efficiency and cross-chain capabilities. The development of the Molecular Future public chain has been rigorously designed to combine financial services and products with blockchain technology. Molecular Future aims to give users a better alternative to the products and services currently offered by the traditional financial market.
3.1 DOMAINS

Molecular Future uses an innovative blockchain network architecture that comprises of many independent blockchains, called domains. Molecular Future is essentially a system of many independent blockchains running together; they are called domains. The domains are run based on the Octahe-dron Practical Byzantine Fault Tolerance (PBFT), an in-house modification of the PBFT algorithm which provides an efficient and secure consensus engine.

The main domain on Molecular Future is the Mega Operating System (MOS). MOS is a public chain which serves as Molecular Future’s multi-chain management system, much like a master server, that runs on a simple governance mechanism that allows new domains, as long as they are compatible, to connect to MOS for integration and upgrades.

The domains communicate with each other via inter-chain transmission (ICT) protocol. Since all token transfers within each domain will be processed through the MOS, the MOS keeps track of the total amount of tokens held by each domain. This enables tokens to be transferred from one domain to another quickly without having to worry about liquidity between domains. This mechanism also makes the system more secure as it isolates each domain from the failures of other domains. As anyone can connect a new domain to the MOS, the system allows for forward compatibility when there are new blockchain innovations.
3.2 SUPER TRIBES

The main difference between the Octahedron PBFT and classical BFT is that instead of having the same weight for each node in the case of the BFT, Octahedron PBFT nodes help to verify transactions; these nodes can be determined at genesis, or are changed over time depending on the blockchain characteristics. These nodes that help to verify transactions are called super tribes. Super tribes participate in the consensus protocol by broadcasting cryptographic signatures to agree upon the next block.

The MOS consists of 101 super tribes. These super tribes are primarily involved in helping to verify transactions; they can be thought as service providers to the MOS network. These super tribes can be replaced but the number of super tribes allowed will always be fixed at 101.

3.2.1 Super tribe elections and replacement

In order to ensure fairness, the super tribe election is an on-chain process recorded on the blockchain. In order to ensure the stability of the community and to avoid the excessive concentration of power in certain super tribes who are allies, the super tribe election is set to automatically occur every 100,000 blocks.

After each super tribe election is completed, the newly appointed super tribes must pay no less than 300,000 MOF as a service deposit for securing the contract to help MOS verify blocks and maintain the network and the service deposit is locked to the super tribes’ contract address. The service deposit is locked after the election is successful and can only be withdrawn after they retire from being a super tribe. The 300,000 MOF is the initial default guarantee amount in the case that a super tribe is found to be malicious.
3.2.2 Obligations of Super tribes

Super tribes are an important part of MOS community architecture and organizational governance. The most important obligation of the super tribe is to produce blocks (that is, package transactions) on behalf of MOF holders, provide computing resources, and ensure the smooth operation of the network. In order to ensure that the super tribe can properly fulfill the obligations of maintaining the governance on the chain, all super tribes must have certain technical capabilities, hardware equipment and the ability to operate and maintain the blockchain.

The super tribe is responsible for participating in the on-chain governance of MOS. It can create proposals for community governance such as MOS parameter changes, MOF transfer fee rates, etc.. In order to prevent malicious proposals, super tribes must pay a minimum of 100 MOF when launching a proposal.

A proposal is considered approved if and only if it meets the following conditions:

- No less than 2/3 (ie, 68 and above) of super tribes participated; and
- No less than two-thirds of the super tribes agree

Super tribes will also be responsible for the management of assets on the chain. The super tribes manage assets on the chain by establishing multi-signature hot and cold wallets on the asset chain. Withdrawal of assets on the chain must also be achieved with the consensus of at least 2/3 of the super tribes.

As a reward for participating in on-chain governance, the super tribe are entitled to payment for their services via block payment, transfer fee payment, and custodian fees. Specifically, for each block generated, all participating super tribes can get 30% of block rewards and transaction verification rewards. In addition, the super tribe can also obtain custodian fees by managing assets on the chain.

If the super tribe fails to fulfill its obligations or violates the MOF community rules, it will be automatically removed. Vacancies in the super tribe will be filled automatically by the candidates that won the 102nd place in the last elections.

3.3 CONSENSUST

The Octahedron protocol requires a fixed known set of tribes to operate, and each tribe is identified by their public key. Tribes will attempt to come to consensus on one block at a time. Consensus on a block proceeds in tranches. Each tranche has a tranche-leader, or chief, who leads a block. In stages, the tribes will decide whether to accept the proposed block or move on to the next. The chief for a tranche is chosen from an ordered list of tribes based on their influence.
Octahedron’s security derives from its use of optimal Byzantine fault-tolerance via super-majority (>2/3) and a locking mechanism.

Together, they ensure that:

$\geq 1/3$ majority must be Byzantine to cause a violation of safety, where more than two values are committed.

The protocol can identify any set of tribes that attempts to violate safety protocols including verifying conflicting blocks or overloading the system through excessive communication.

### 3.4 PREVENTING ATTACKS

Since having more than 1/3 of majority can influence a block, malicious actors can stop the blockchain by going offline or simply not participating. These malicious actors can also censor specific transactions by rejecting blocks that include these transactions. This would cause a significant portion of block proposals to be rejected, thus slowing down the rate at which blocks commit to the blockchain.

In the case that these attacks succeed, a subset of the domains must coordinate externally to fork the chain and decide the initial subset of domains with their signatures. Domains must bear in mind that if they decide to fork, they forgo any collaterals on all other forks. End-users will then be prompted to decide on whether to support the fork. If more than half of the original domains voice their support, the fork will proceed.

Since no non-synchronous BFT algorithms can come to consensus when more than 1/3 majority are malicious, yet a fork assumes that malicious attack has succeeded, the coordination of a fork cannot be done automatically via a protocol. Hence, the fork will only proceed when users have come to an agreement via a social consensus, perhaps, via the MOS app.
In unusual cases where 2/3 majority are malicious, these malicious actors can commit arbitrary, invalid states. This is the same for any BFT consensus system. Invalid states are more difficult to detect because they require non-validating peers to verify blocks, which means that they will have to keep a local copy of the state and execute each transaction again to compute the state root independently for themselves. Similar to forking and censorship attacks, when the invalid state is detected, the only solution is to come to a manual decision based on social consensus. As a means of deterrence, domains of Octahedron blockchain must go through Know-Your-Customer (KYC) procedures, malicious attackers can be identified and brought to the law.

### 3.5 CROSS-CHAIN CAPABILITIES

A specialised domain can act as a bridge between two or more cryptocurrencies. These domains whose primary role is to connect two domains together is called a “bridge”. A bridge is similar to the relationship between the Mega Operating System and the domains; both must keep up with the latest blocks of the other in order to verify proofs that tokens have moved from one to the other.

When new blocks are mined on a compatible blockchain (“the source”), the bridge domains will share their copy of the source’s blockchain data and come to an agreement on the correct committed blocks. When a bridge receives payment from the source blockchain and a set number of block confirmations have been completed, a corresponding account is created on the bridge with that balance.

If users wanted to connect Molecular Future with Ethereum for example, the bridge can share the same domain-set as the MOS. On the Ethereum side (the source), a bridge-contract would allow ether holders to send ether to the bridge by sending it to the bridge-contract on Ethereum. Once ether is received by the bridge-contract, the ether cannot be withdrawn unless an appropriate IBC packet is received by the bridge-contract from the bridge-zone. In the same way that Ethereum can connect to the MOS, newer blockchain innovations can connect as a domain to the system.

When a project applies to connect their main chain to Molecular Future (MOS main chain), a connection service fee must be paid to the MOS developers since they will be providing technical support and maintenance services. The project can either pay in BTC, ETH, USDT or MOF. They will be entitled to a 10% discount if paid in MOF.
Jayden Wei
Chief Executive Officer

Jayden is an experienced fund manager with a demonstrated history of working in the financial services industry. Jayden has extensive experience in technological investments and has been an avid investor in seed-stage technological start-ups. He runs his own start-up incubator and is also the manager of Australia’s first blockchain venture capital fund. Jayden is deeply passionate about digital technology, he hopes to continue to develop and invest in technological projects with the aim of improving society through better use of technological resources. This has led him to become an early investor in the blockchain industry; he believes that blockchain technology will revolutionise the digital economy while also making considerable impact on the traditional economy which still faces issues regarding privacy, transparency and efficiency.

Grigorij Richters
Chief Marketing Officer

Grigorij will lead global marketing operations and product marketing in the Molecular Future Team. He has years of practical experience in the field of scientific and technological innovations. Grigorij is also a co-founder of United Nations Asteroid Day together with Stephen Hawking and QUEEN guitarist Brian May. During his previous tenure at Vodafone, Blocks United and other well-known large corporations, Grigorij was responsible for managing B2B relationships and has established good business relationships with many of the leaders of Fortune 500 companies. He is a go-getter and business opportunist who has amassed a wealth of experience in the Euro-American marketing and public relations space.

Ryan Xu
Honorary Chairman of the Foundation

Over 7 years’ experience in fintech. Investor in bitcoin mining and other related projects. Initiatives include the Melbourne Bitcoin Technology Centre, Bitcoin Boulevard Australia and Bitcoin Buskers Awarded “Blockchain opinion leader” in 2016.
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