FORTUNA WHITEPAPER

Blockchain Platform for Global OTC Derivatives Market

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Contents

Summary

A Peer-to-Peer Electronic Cash System, published by Satoshi Nakamoto in 2008, has ushered in a new era of thought about decentralization.[1] This inspired Fortuna, the first blockchain platform for the global Over-the-counter (OTC) derivatives market. Fortuna solves core problems and introduces beneficial features as follows:

1. Builds a network of trust. Fortuna solves the problem of trust in the OTC derivatives market with the new consensus algorithm DPOSA, structured smart contracts, a decentralized quote scheme, digitalized supervision, and other blockchain techniques.

2. Improves operational efficiency. As a specialized blockchain platform for derivatives, Fortuna can improve the operational efficiency during each step of a transaction, including contract creation, price quoting, contract signing, trading, and clearing.

3. Increases liquidity. As a medium of exchange accepted by Fortuna, the new utility-based token FOTA allows the platform to access the global liquidity pool and transcend barriers imposed by physical location and currency.

4. Motivates users to trade. Fortuna supports two modes of trading: PrC and PuC. With PrC, users make a peer-to-peer transaction without any cost. With PuC, users create new types of derivatives and shape the market while benefiting from new trading volume.

5. Enriches the derivatives market. Users of Fortuna can create all kinds of derivatives with different underlying assets, deal structures, durations, margin ratios and other transactional elements. Fortuna will be a worldwide incubator for innovative derivatives tools.

6. Uses algorithms to self-regulate. With algorithmic regulation, Fortuna supports transparent, real-time, and comprehensive data supervision. Algorithms for smart contracts, digitalized supervision, consensus arbitration, and other new features create a fresh mode of regulation and self-discipline.

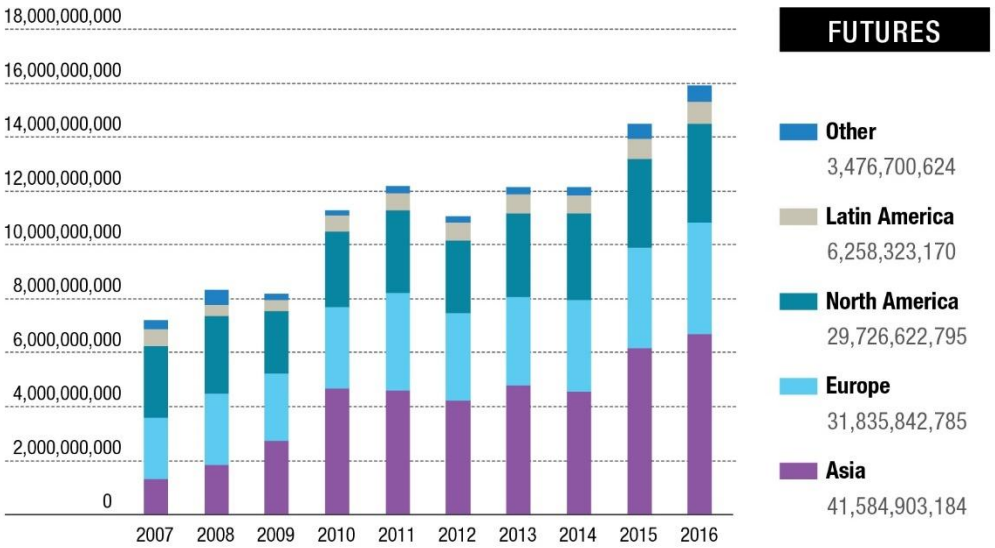
As John Culkin explained the thought of Herbert Marshall McLuhan, “We shape our tools and then our tools shape us.” Fortuna will inspire a new mode of thinking for the global OTC derivatives market and make hedging tools more popular and more available.

1. Fortuna

This chapter will analyze the current state of the derivatives market and introduce the solutions for three core problems of the OTC derivatives market. Moreover, Fortuna's three-dimensional, value-added innovations will be introduced, and the meaning of blockchain technology for self-discipline and regulation will be analyzed. Finally, Fortuna's business model and economy will be detailed.

1.1 Current State of the OTC Derivatives Market

2010 is considered the year hedging came to China, because securities margin trading and stock index futures were issued for the first time. This ended the era of a one-dimensional stock market. As stock index futures, securities margin trading, treasury bond futures, commodity options, and other derivatives were issued, many companies began the transition from traditional private equity companies to hedge funds by adopting a variety of investment strategies. These included long/short, macro, event-driven, relative-value, and more. Meanwhile, the volume of the Chinese futures market reached four billion RMB, and the balance of securities margin financing reached 900 billion RMB. Overall, the Chinese derivatives market has entered a period of rapid development, and Asia became the biggest market in 2016.



source: FIA[2]

Despite this high-speed of development, the Chinese derivatives market still has many problems when compared with the markets of America and Europe.

1. Exchange Market: lack of variety

As the data provided by the China Futures Association shows, there were only four futures exchanges and only 48 kinds of derivatives in the exchange market in the first half of 2017.[3]The lack of variety in derivatives restricts participation, and creates unmet demand.

Exchange	Number of Derivatives	Name of Derivatives
Shanghai Futures Exchange	14	Copper, Aluminum, Zinc, Lead, Nickel, Tin, Gold, Silver, Steel Rebar, Steel Wire Rod, Hot Rolled Coils, Fuel Oil, Bitumen, Natural Rubber
Zhengzhou Commodity Exchange	17	Cotton No.1, Japonica Rice, Late Rice, Rapeseed Oil, Wheat PM, Wheat WH, Early Rice, Rapeseed Meal, Rapeseed, Flat Glass, Methanol, Ferrosilicon, Silicon Manganese, PTA, Thermal Coal, SR Call, SR Put
Dalian Commodity Exchange	17	Corn, Corn Starch, No.1 Soybean, Egg, No.2 Soybean, Soybean Meal, Soybean Oil, RBD Palm Olein, Fiberboard, Blockboard, Soybean Meal Options, Linear low-density polyethylene, Polyvinyl chloride, polypropylene, Coking Coal, Coke, Iron Ore
China Financial Futures Exchange	5	CSI 300 Index Futures, CSI 500 Index Futures, SSE50 Index Futures, 5-year Treasury Bond Futures, 10-year Treasury Bond Futures

Furthermore, it is clear that the exchange market has developed in an unbalanced manner. In the first half of 2017, five kinds of derivatives (Steal Rebar, Bitumen, Zinc, Natural Rubber and Hot Rolled Coils) made up 81 percent of the total volume of the Shanghai Futures Exchange and the other nine kinds of derivatives made up only 19 percent. This indicates that the Chinese exchange derivatives market is still not mature.

2. OTC Market: the problem of credit risk and efficiency

In 2013, the China Futures Association issued its *Guide for Risk Management Services Carried by Subsidiaries Set up by Futures Companies*.[4] Since then, many futures companies in China began to set up subsidiaries to provide OTC derivatives services in order to satisfy the requirements of risk management and price management in various areas. As the OTC derivatives market in China develops rapidly, credit risk and trust issues become key challenges for the OTC market. Although many institutions are trying to build an inter-

institutional OTC derivatives market, the lack of an authoritative third-party leaves the market loose and inefficient.

3. Whole Market: unconnected with the overseas market and insufficient institutional investors

As the *FIA 2016 Volume Survey* shows, the derivatives exchanges of China performed well in terms of volume dimension.[5]

TOP EXCHANGES IN 2016

For more information: contact Will Acworth at wacworth@fia.org

1	CME Group		International Securities Exchange Mercury [1,4]	20	ASX
	Chicago Mercantile Exchange		Nasdaq Commodities		ASX 24
	Chicago Board of Trade		Nasdaq NLX		ASX
	New York Mercantile Exchange	8	Dalian Commodity Exchange	21	Taiwan Futures Exchange
	Commodity Exchange (COMEX)	9	BM&FBovespa	22	TMX Group
2	National Stock Exchange of India		Bolsa de Mercadorias & Futuros		Boston Options Exchange [1]
3	Intercontinental Exchange		Bolsa de Valores de Sao Paulo		Montreal Exchange
	ICE Futures Europe	10	CBOE Holdings	23	Singapore Exchange
	NYSE Arca [1]		Chicago Board Options Exchange [1]		Singapore Exchange
	ICE Futures U.S.		C2 Exchange [1]		SGX Asiaclear
	NYSE Amex [1]		CBOE Futures Exchange	24	Euronext
	ICE Futures Canada	11	Zhengzhou Commodity Exchange	25	Rosario Futures Exchange
	ICE Futures Singapore [2]	12	Korea Exchange	26	Borsa Istanbul
4	Moscow Exchange	13	BSE India	27	Thailand Futures Exchange
5	Eurex	14	JSE Securities Exchange	28	London Stock Exchange Group
6	Shanghai Futures Exchange	15	BATS Exchange [1]		Borsa Italiana
7	Nasdaq		BATS Exchange [1]		Turquoise Derivatives
	Nasdaq PHLX [1]		EDGX Options Exchange [1]		CurveGlobal [5]
	International Securities Exchange [1]	16	Hong Kong Exchanges and Clearing	29	Tel-Aviv Stock Exchange
	Nasdaq Options Market [1]		Hong Kong Exchanges and Clearing	30	Tokyo Financial Exchange
	Nasdaq Exchanges Nordic Markets		London Metal Exchange	31	Metropolitan Stock Exchange of India
	International Securities Exchange Gemini [1]	17	Japan Exchange	32	MEFF
	Nasdaq NFX [3]	18	Miami International Securities Exchange [1]		
	Nasdaq Boston [1]	19	Multi Commodity Exchange of India		

However, the derivatives markets in China are not well connected with the international market for many reasons, such as foreign exchange control policies. The lack of professional institutional investors is another serious problem. Since the first hedge fund was started in the mid-twentieth century, their value has jumped from about forty billion to three trillion dollars. The American market share is now 70 percent, the European market, 20 percent, and Chinese market, 0.5 percent. This small market share shows both the Chinese market's immaturity and growth potential.

1.2 Solutions for Three Core Problems

There are four essential signs of a mature financial market: a large pool of underlying financial assets, abundant derivatives, global liquidity participation, and efficient regulation. As the market matures, demand for derivatives and risk management services increases. But three additional problems remain:

1. Building a trust network for the OTC derivatives market.

2. Improving its operational efficiency.

3. Increasing its liquidity.

1.2.1 Building a Trust Network

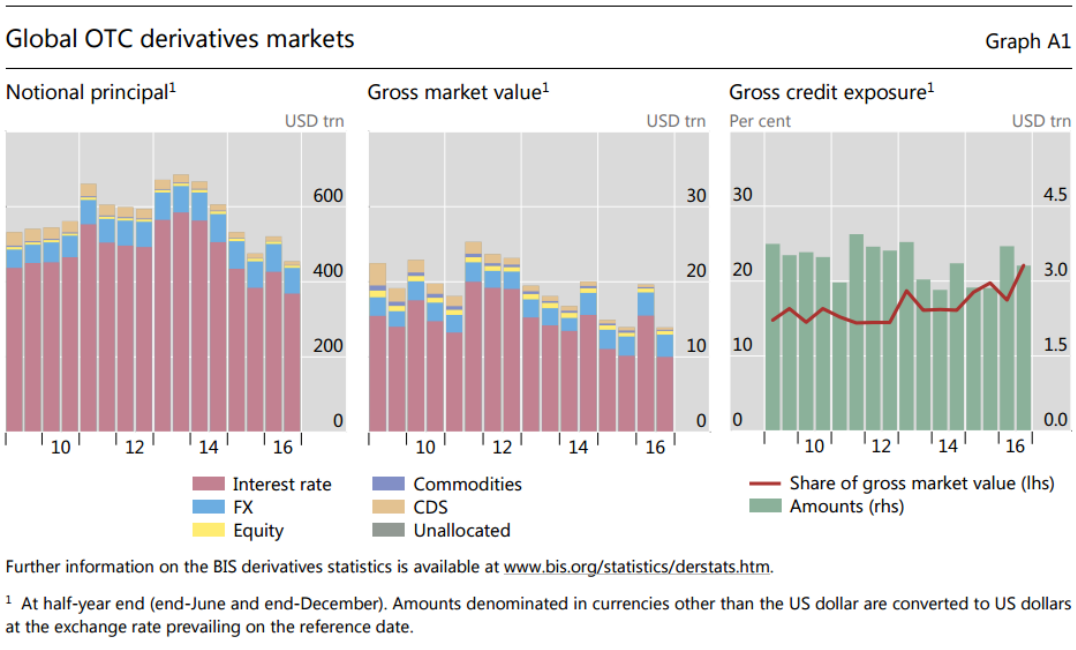
Issues with trust and credit risk not only restrict participation, they also limit the liquidity pool. Difficulties in building trust within the OTC derivatives market leads to three structural features:

1. The majority of participants are big intuitions with good credit, the participation of small enterprises and individuals is rare.

2. The nominal amount of single OTC derivative contracts is very large in general and the duration of the contracts tend to be quite long.

3. There is not a great variety of OTC derivatives.

The third problem may seem strange because one of the advantages of the OTC derivatives market is that it supports personalized contracts. However, the credit risk and the trust problems cause investors to participate prudently, especially when traders fall under different jurisdictions. Participants are not willing to take extra risks with personalized derivative contracts, which may have complex deal structures and new underlying asset classes. As the data provided by the Bank for International Settlements shows, the notional principal reached 48.3 trillion dollars in 2016.[5]The market share of currency derivatives (interest rates and foreign-exchange derivatives) exceeded 90 percent.



The reasons for the trust problem within OTC derivatives market are:

1. The participants of the OTC derivatives market come from different fields, such as finance, agriculture, manufacturing, and so on.

2. The regulation and disciplinary mechanisms are not mature or comprehensive.

3. Traditional offline signing of contracts causes disputes.

4. There is a lack of default management mechanisms that do not cause delay and require human intervention.

These cannot be easily solved by traditional means. Fortuna introduces a new way to solve these problems with blockchain technology:

1. Consensus Algorithm. Fortuna introduces an optimized version of a consensus algorithm based on Delegated Proof of Stake (DPOS) called DPOSA to safeguard the data's integrity and guarantee that it cannot be tampered with. As long as malicious entities or nodes account for no more than one third of the total, there will be no fork or moral hazard.

2. Smart Contract. Fortuna replaces the traditional offline contract signing mode with a programmable and automatically executable smart contract based on the blockchain to eliminate the credit risk of derivatives trading activities.

3. Digitalized Supervision. Fortuna introduces a new utility-based token, FOTA, to unify the exchange media on the platform. Participants from different areas and jurisdictions trade using FOTA. FOTA in the margin account will be supervised twenty-four-seven without the possibility of human intervention. These digitalized supervision modes based on utility-based token are much more efficient and transparent than traditional supervision modes used by commercial banks.

4. Decentralized Quote Scheme. Fortuna creates a decentralized scheme for price quoting while introducing a mechanism similar to corporate equity governance to motivate the quoters to fulfill their duties while eliminating the possibility of price manipulation.

5. Whole Network Arbitration. If a trading node disagrees with the execution result of derivative contracts, it can apply for arbitration carried by the whole network, safeguarding the equity of Fortuna.

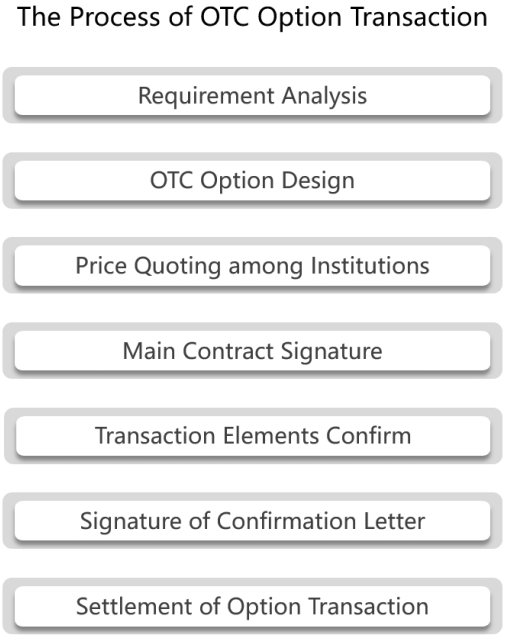
6. Lifelong Credit Record. Every node on Fortuna will have a lifelong credit record based on blockchain, which ensures the transparency, integrity, and safety of credit records.

7. Algorithmic Self-Discipline. Fortuna is an ecological decentralized platform, which consists of five functional roles, including CoT maker, Trader, Quoter, Marker Maker and Delegate. All settings regarding the definitions, motivations, and restrictions of Fortuna's five roles are based on algorithms instead of rules on paper. This ensures efficient network discipline.

In sum, Fortuna will build a trust network for the OTC derivatives market with a consensus algorithm, smart contracts, digitalized supervision, a decentralized quote scheme, whole network arbitration, lifelong credit records, algorithmic self-discipline, and other technical features.

1.2.2 Improving Operational Efficiency

Apart from the credit risk and trust problem, the low operational efficiency of the OTC derivatives market is another core problem. An OTC option transaction has at least seven steps and requires manual operations for many of them, resulting in an inefficient process.



Fortuna introduces a blockchain-based solution to solve this problem.

1. Contract Creation and Signing. Fortuna introduces structured smart contracts, which are optimized to meet the demand of operational efficiency. The smart contract has three layers: the main contract, the contract template, and the contract itself. The lowest layer inherits all the clauses of higher layers and each layer sets up their own class of clauses. Structured smart contracts improve the efficiency of contract creation and signing.

2. Quote Broadcast on Blockchain. Fortuna replaces the traditional method of price quoting, which requires contact with every potential counterparty via telephone or email, with broadcast on blockchain, which reduces the cost of communication and response times. Also, the credit record of the trading node is attached to broadcast information, which further improves the efficiency of the transaction.

3. Automatic Settlement with Smart Contracts. Fortuna utilizes the technical features of smart contracts to improve the efficiency of transaction settlements. Replacing manual settlement with programmable and automatically executable smart contracts increases speed and reduces errors.

4. Data Supervision on Blockchain. Fortuna uses the technical features of blockchain and decentralized networks to improve the quality and efficiency of data supervision. For example, with Fortuna, there is no need for the regulator to send audit requirements to each institution while worrying about the quality, timeliness, and veracity of data.

In conclusion, Fortuna will improve the efficiency and quality of contract creation and signing, price quoting, transaction settlements, and data supervision by using the technical features of blockchain and the optimization of smart contract technology.

1.2.3 Increasing Liquidity

The third core problem of the OTC derivatives market is the liquidity problem:

1. Foreign exchange control policy restricts the connection between the Chinese and international markets.

2. Personalized contracts make secondary trading difficult.

3. Lack of trust limits the number of participants, which hampers overall liquidity.

Fortuna introduces a solution for this problem with blockchain technology.

1. Unifies Exchange Media with the Utility-based token FOTA. Fortuna introduces a new kind of utility-based token called FOTA to unify the exchange media on the platform. All participants around the world trade derivatives using FOTA on Fortuna regardless of their physical location and national currency.

2. Supports PrC and PuC Trading Modes. Fortuna not only introduces a structured smart contract with three layers but also supports two trading modes: PrC and PuC. PrC enables every trading node of Fortuna to launch a peer-to-peer derivative transaction without any cost. PuC offers opportunities for every node of Fortuna to be a market maker and create a new market for a new type of derivative, which brings profits to the creator based to the trading volume of the new contract. PuC is similar to the standardized contracts traded in exchanges which have better liquidity. The biggest difference between PuC and the exchange-traded contract is that the exchange-traded contract is designed and issued by exchange, but on Fortuna, every node can design and issue any kind of derivative contract on demand.

1.3 Three-Dimensional Innovations

Apart from providing solutions for the three core problems of the OTC derivatives market, Fortuna also makes an impact with three-dimensional innovations:

1. Supports more precise and specific derivatives on a smaller granularity scale.
2. Supports a new class of underlying assets.
3. Supports more participants using hedging as a scientific risk management tool.

1.3.1 Smaller Granularity Scale

The majority of derivatives are designed for the majority of participants. However, many investors need some derivatives on a smaller granularity scale to manage their risk more precisely and more specifically. For example, S&P 500 index futures are good for majority of investors, but there is still a lot of demand to make the S&P 500 a smaller index so that investors can adopt a more targeted hedging strategy to manage the risk of their portfolios.

The factors that can affect the price of underlying assets are abundant, and investors may have a more precise prediction or analysis of these individual factors instead of the price of the underlying asset. Take for example, a company involved in trade between China and the United States. If its CEO predicted that Trump would win the 2016 election and this would affect foreign exchange rates and international trade, the only way he could manage risk in the financial market would be to trade foreign exchange derivatives in order to hedge that risk. But such a method has problems.

First, the reaction chain is too long. The result of the presidential election determines whether Trump has the right to name a new Federal Reserve Chairman. The new chairman can influence monetary policy, which impacts foreign exchange. This long reaction chain leads to less precise hedging.

Second, there are too many factors affecting foreign exchange outside the presidential election. Even if a CEO predicts such an election result correctly, he does not necessarily benefit from trading derivatives in the market.

Third, the presidential election not only affects foreign exchange but also tariff policies and other policies that affect international trade between China and America. The CEO can trade foreign exchange derivatives to hedge the risk of assets already accumulated, but there is no vehicle in the traditional market for him to hedge the future risk of international trade as a whole.

To address these problems, Fortuna supports new types of derivatives on a smaller granularity scale which enable investors or hedge fund mangers to trade derivatives on a single factor such as monetary policy, tariff policy, presidential elections, and so on. New types of derivatives on a smaller granularity scale are a new way for investors to hedge risk more precisely.

1.3.2 New Underlying Assets

The majority of traditional assets underlying derivatives are commodity and financial securities. However, as various areas are affected by the Internet and other new technologies, many new classes of assets are created, and derivatives for their risk management must be developed.

Thousands of blockchain-based utility-based tokens have been popular for years, which has caused great demand for them on the derivatives market. In fact, the CME Group recently announced that it will trade Bitcoin futures. Also, online micro consumer finance has developed rapidly over the last few years. The derivatives for the credit assets accumulated by these Internet consumer finance companies are necessary and important.

As new technology develops, there will be more and more cases like these, which will cause great demand for derivatives and risk management. Fortuna will enable every node throughout the blockchain to create new types of derivatives with new types of underlying assets, which will create a whole new OTC derivatives market.

1.3.3 Greater Access to Hedging

Traditional derivatives markets are not friendly to many investors for two reasons:

First, a high threshold of financial knowledge is required. The majority of investors are not familiar with the derivatives market, because of their complex deal structures and specialized language. However, the demand for risk management shows up everywhere for every investor even if they don’t realize it and are blocked by their limited knowledge.

Second, there is a high threshold for initial deposits. Take the stock index futures of China for example. The initial account deposit requirement is 500,000 RMB, a high threshold for the majority of potential investors in China. Although a high threshold for initial deposits is an effective way to protect investors by shielding them from risk, there are other ways to protect investors while enabling them to use derivatives to hedge.

In contrast, Fortuna supports more friendly vehicles for risk management by lowering the

threshold of initial deposits, simplifying deal structures, standardizing contract clauses, introducing new asset classes, and more. Fortuna allows a greater number of investors to access risk management through hedging.

1.4 Blockchain for Supervision

A sophisticated regulation system and self-discipline mechanism are necessary conditions for mature financial markets. Blockchain technology provides a whole new method of supervision.

1. Builds a self-disciplined community with blockchain. Fortuna creates an ecosystem with five functional roles including CoT Maker, Trader, Quoter, Market Maker, and Delegate. The ecosystem is balanced by carefully defined roles and well designed interactions and motivations that use FOTA as punishment and reward. The whole self-disciplinary mechanism is programmable and automatically executable with algorithms.

2. Data supervision. Fortuna supports transparent, real time, and comprehensive trading data supervision with blockchain. There is no need for the regulation department to send audit and data requirements to each institution and worry about the quality, timeliness, or accuracy of the data provided. Fortuna's new approach improves the quality and efficiency of data supervision for the OTC derivatives market.

3. Inspiration for regulation. Structured smart contracts, digitalized trading fund supervision, consensus-driven arbitration algorithms, and other innovative core features of Fortuna are fertile ground for new and improved regulation schemes for the OTC derivatives market.

4. Lifelong credit record. Using blockchain technology, Fortuna records information on the behavior of every node, including price quoting, contract execution, default, arbitration, etc. These credit records are safeguarded, lifelong, and available to the whole blockchain.

Fortuna will utilize and optimize the core technical features of blockchain to offer tools and inspiration for the regulation and discipline of the OTC derivatives market.

1.5 Fortuna's Economic Model

As an open-source platform based on blockchain technology, Fortuna is owned by every node of the chain. Fortuna will not charge any node any kind of fee. All potential fees will be charged by nodes offering various services. Fortuna will introduce a utility-based token,

FOTA, which will be used as an exchange medium for derivatives trading. The total amount of FOTA will be one billion.

For example, if a Contract Template created by a CoT maker has its transaction fee set to "standard." All transaction fees from the contracts produced by that CoT will be distributed to three type of serving nodes:

Node Type	Description
CoT Maker	CoT makers benefit from the commission of the contract created and traded under the CoT (Contract Template).
Quoter	Quoters will get FOTA based on their shares of the quoter corporation that provides price-quoting services for trading activities.
Delegate	101 delegates elected by the whole network based on the DPOSA consensus algorithm will get a certain percentage of the commission from the contract stored in the blocks, which delegates produced.

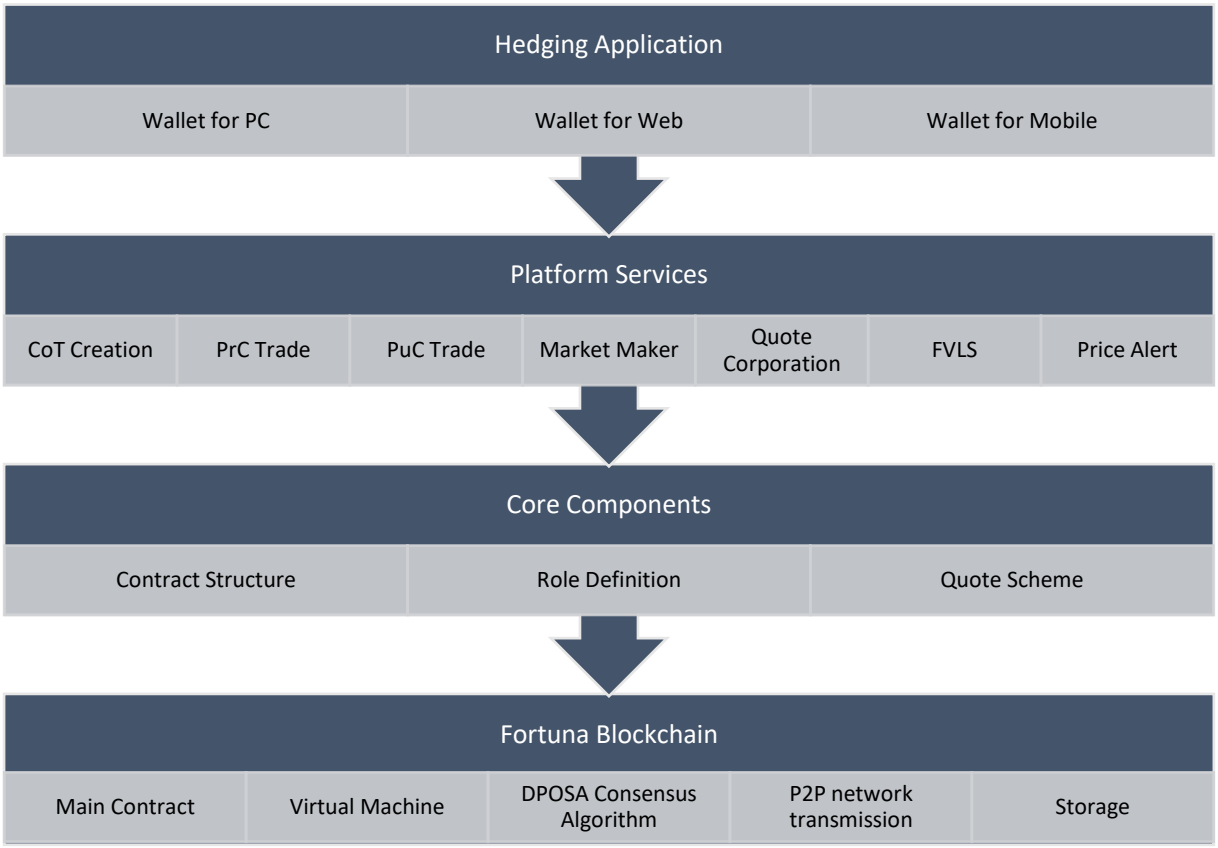
There are many roles on Fortuna that are able to profit on the decentralized platform. This win-win design will help ensure Fortuna's sustained development.

Roles	Sources of Profit
Delegate	Fortuna will issue 1% of total FOTA as a reward for all delegates producing blocks to store data.
Market Maker	Under the PuC trading mode, every node can be a market maker to earn the bid-ask spread in FOTA.
FVLS	FVLS nodes will provide FOTA value-locking services for the trading nodes to ensure that the FOTA value compared with other utility-based tokens or currencies will be the same during the contract period. FVLS will be a good tool for risk management and FVLS nodes will charge for it.

2. Technology

This chapter introduces the architecture of Fortuna and the details of four layers: the bottom layer, core component layer, platform service component layer and application layer. It goes on to detail the structure of smart contracts, user roles, the decentralized quote scheme, and the life cycle of PrC/PuC. DPOSA is discussed as an optimized version of the DPOS consensus algorithm. The meaning of FVLS is analyzed, followed by an explanation of Fortuna's compliance filtering scheme.

2.1 Fortuna Architecture



2.1.1 Bottom Layer

Building an application based on existing blockchain technology has many advantages, such as decreasing technical demands, making development more efficient, automatizing

iteration, and so on. However, Fortuna has chosen to build a complete blockchain from scratch, because an optimized and independent blockchain will better suit the global OTC derivatives market, which needs eight core features:

Feature	BitCoin	Ethereum	Fabric	Qtum
Application Ecosystem	●	●	●	●
Virtual Machine		●	●	●
Utility-based Token	●	●		●
Quote Scheme			●	
TPS			●	●
Scalability			●	
Smart Contract Upgrade				
Search				

2.1.2 Core Component Layer

The core component layer of Fortuna consists of the structured smart contract, role definitions, and decentralized quote scheme.

1. Structured Smart Contract

In order to meet the special requirements of the OTC derivatives market, Fortuna introduces structured smart contracts with three layers, including the main contract layer, contract template (CoT) layer, and contract layer. The structured smart contract design improves the operational efficiency of contract creation, matching, signing, and clearing by cutting out repetition. There are two kinds of contracts at the contract layer: Private Contract (PrC) and Public Contract (PuC). The PrC trading mode enables every Fortuna user to launch a peer-to-peer derivative contract transaction without transaction costs. The PuC trading mode offers opportunities for Fortuna users to be Market Makers and create new markets for a new types of derivative, which allows users to profit from the new derivatives' trading volume.

2. Role Definition and Interaction Design

Fortuna builds a healthy ecosystem through role definition and interaction design. There are five functional roles on Fortuna: Contract Template Maker, Trader, Quoter, Market Maker, and Delegate. With the FOTA token incentive design and cooperation mechanisms built into the five roles, this new decentralized OTC derivative market will develop in a healthy, sustainable way.

3. Decentralized Quote Scheme

As a decentralized network for the OTC derivatives market based on blockchain technology, Fortuna needs to support price quoting that provides the prices of underlying assets for the settlement and clearing of derivatives contracts. Each node on Fortuna can be a Quoter node after receiving Quote Name Service (QNS) verification. Every Quoter needs to be a member of a Quote Corporation (QC) in order to provide price-quoting services for underlying assets. Every Quoter has equity in a QC and will benefit from the profit of that QC in accordance with equity owned. Meanwhile, an equity distribution mechanism motivates all Quoter nodes to fulfill their duties and prevents exit scamming.[8]

2.1.3 Platform Service Layer

1. CoT Creation

Each node on Fortuna can create their own CoT which must confirm the underlying asset, the deal structure, and other transactional elements. A CoT creator deposits a certain amount of FOTA to guarantee it will not do something harmful to other nodes or the whole platform, such as creating lots of useless CoT. CoT creators benefit from commissions in accordance with the trading volume of their contracts.

2. PrC Trading

Fortuna uses a PrC trading mode, which enables each Fortuna user to launch peer-to-peer derivative transactions without agency cost. PrC users define the settlement time, delivery price, margin ratio, derivative price, short or long position, and other transactional elements.

3. PuC Trading

Fortuna introduces a PuC trading mode which offers opportunities for each Fortuna user to be a Market Maker and create a new market for a new type of derivative contract which brings profit for the creator in accordance with the new contract's trading volume. A PuC defines the settlement time, delivery price, margin ratio, derivative price, Market Maker, and other transactional elements.

4. Market Making

Once PuC chooses a node to be its Market Maker, the Market Maker earns the bid-ask spread from their market making actions. Market Makers deposit an amount of FOTA to guarantee their ability to provide market liquidity.

5. Price Quoting

Many Quote Corporations that provide price quoting services for underlying assets in the settlement of derivatives transactions in the OTC market charge fees, and each of the corporation's Quoters benefit from the corporation's overall profit in accordance with the equity they own.

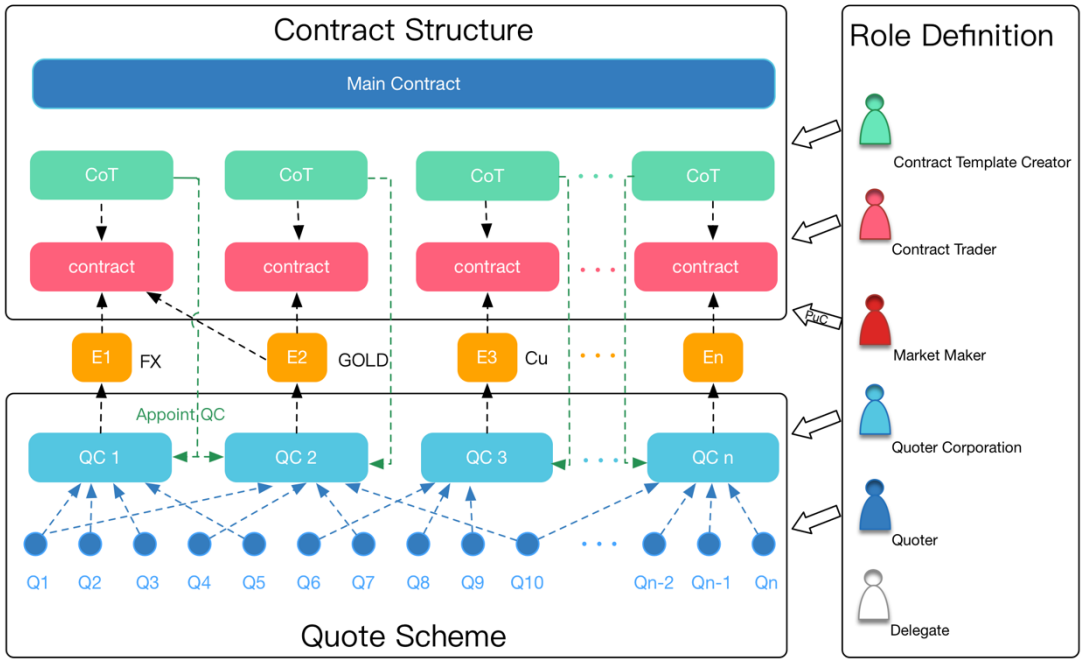
6. FVLS

As a decentralized platform for hedging, the most important purpose of Fortuna is to help investors manage their portfolio risk. FOTA, as an exchange medium of Fortuna, allows Fortuna to partake in global liquidity regardless of physical location and home currency. But if the value of FOTA fluctuates, risk management becomes less efficient and hedging is compromised. To prevent this, Fortuna offers a FOTA value-locking service (FVLS), which allows users to trade without worrying about fluctuation in FOTA's value, for a reasonable fee.

2.1.4 Application Layer

In order to provide a great user experience, Fortuna publishes different versions of its wallet and platform for PC, web, and mobile phones. This allows Fortuna to meet users' needs for security, efficiency, and availability. Additionally, Fortuna's light application only requires users to download the head of the block instead of the whole block while still supporting secure block access that enables the creation of CoT, PrC, PuC, and the trading of derivatives on Fortuna.

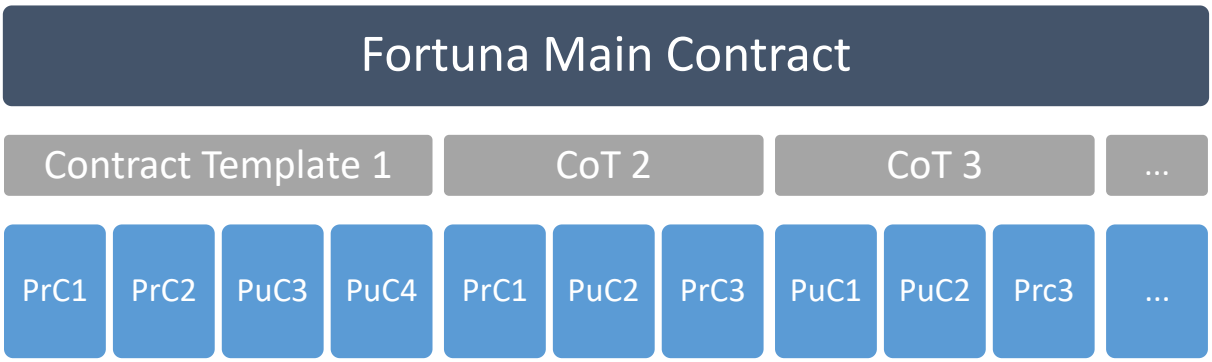
2.2 Fortuna’s Ecosystem



The whole ecosystem of Fortuna is built on Fortuna blockchain and its three core components: structured smart contracts, decentralized quote schemes, role definitions, and interaction design.

CoT Makers create a variety of contract templates under the unified main contract. The resulting CoT defines the underlying asset, deal structure, and designates a Quote Corporation. A Contract Trader can create a PrC and search for a counterparty to trade with. Alternatively, a Contract Trader can create a PuC under a CoT to launch long or short trading activities with other nodes. A Quoter from a Quote Corporation can provide price-quoting services for one kind of underlying asset, and the quoted price becomes the basis for the settlement of transactions. A Market Maker provides liquidity for the PuC, and the delegates elected by the DPOSA consensus algorithm produce blocks for storing data. This cooperation among all the roles and their FOTA-based incentives enables Fortuna to develop in a healthy, sustainable way.

2.3 Structured Smart Contract



1. Fortuna Main Contract

The Fortuna Main Contract is the only main contract accepted by Fortuna, and the clauses are similar to the main contracts of the National Association of Financial Market Institutional Investors, the Securities Association of China, and other self-regulatory OTC derivatives organizations. Each trader on Fortuna signs the main contract before they start and agree on the makeup of contracts, their efficacy, their payment and delivery duties, and the definitions of default, default management, termination, interest, compensation, expense, arbitration and other non-transactional elements.

2. Contract Template

All Fortuna users can create their own CoT with different underlying assets (commodities, currencies, bonds, stocks, credit assets, utility-based tokens, events, etc.), deal structures (forwards, swaptions, American Options, European Options, Logarithmic Market Scoring Rules, etc.), restrictive clauses, and other core transactional elements.[9] Any CoT can produce multiple contracts.

3. PrC

A Private Contract is a kind of derivative contract appropriate for the peer-to-peer trading mode. PrCs inherit all the clauses of the corresponding CoT and define the settlement time, delivery price, margin ratio, contract price, short/long direction, and other transactional elements. PrCs have less liquidity and match less efficiently but can be traded peer-to-peer at lower agency cost.

4. PuC

A Public Contract is a kind of derivative contract which is appropriate for the N-to-N trading mode and requires the participation of Market Makers. The creator of the corresponding CoT is the Market Maker by default, unless the creator chose another node to

be the Market Maker for the PuC in the CoT. The PuC inherits all the clauses of the corresponding CoT and defines the settlement time, delivery price, margin ratio, contract price, and other transactional elements. PuCs are very similar to contracts traded in derivatives exchanges. The biggest difference is that standardized contracts traded in exchanges are designed and published by exchanges and users cannot make changes. PuC, on the other hand, are designed and created by Fortuna users. Another big difference is that the commission of standardized contracts traded in exchanges all go to the exchange, while the commission of PuCs all belong to CoT Creators. So the PuC is a new type of derivative contract with great malleability.

2.4 Role Definition

There are five roles on Fortuna:

1. CoT Maker

- All users can create their own CoT while defining the deal structure and underlying assets.
- A CoT Maker must assign a Quote Corporation to provide price-quoting services for the chosen underlying asset.
- A CoT Maker benefits from the trading volume of underlying contracts. This kind of mechanism motivates CoT Maker nodes to create reasonable and popular contracts to increase their profit.
- A CoT Maker must deposit an amount of FOTA to guarantee it will not damage the Fortuna's ecosystem by creating multiple, useless contracts, for example.

2. Contract Trader

- All users with FOTA can trade various derivatives on Fortuna to manage their portfolio risk.
- All users can choose a CoT and create a corresponding PrC or PuC to define various transactional elements.
- All users can trade with other users on a trustworthy, blockchain-based network.
- All contract traders deposit an amount of FOTA according to the margin ratio required.

3. Price Quoter

- All users can apply to be a Quoter.
- A node can be a Quoter only if it demonstrates interface efficiency by passing Quote Name Service(QNS) verification.

• A quoter node must join at least one Quote Corporation to start providing price-quoting services and pay an amount of FOTA for equity in the Quote Corporation.

• All contracts invoke a price quoting service provided by a Quote Corporation and produce a Quote Matrix to calculate the final result through the singular-value decomposition (SVD) consensus algorithm.

• A Quoter gains profits based on equity owned in their corresponding Quote Corporation.

• The equity of a Quote Corporation is distributed based on the actions of their Quoters.

• A Quoter can sell its equity back to their Quote Corporation for FOTA when they wish to stop.

4. Market Maker

• Provides market making services for a PuC and must deposit an amount of FOTA as a margin.

• Market Makers make profits through the bid-ask spread of market making.

• The creator of the corresponding CoT will be the default market maker.

5. Delegate

• A delegate produces blocks as well as keeps trading records. For each block produced, the delegate is rewarded with FOTA.

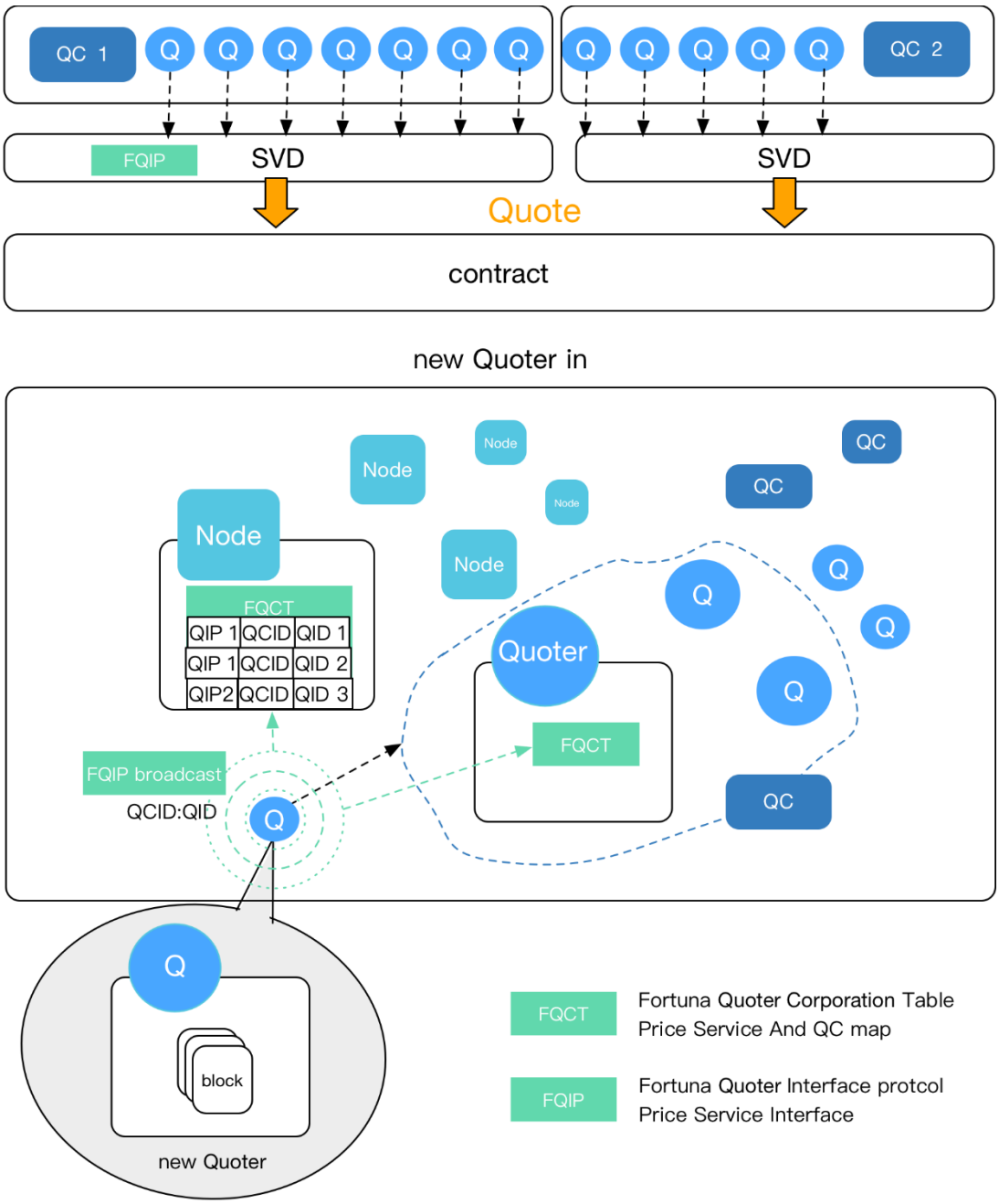
• There are a total of 101 delegates in the whole network, which are elected based on the DPOSA algorithm.

• Until contracts and quotes are written into the block, a delegate cannot view their contents.

2.5 Decentralized Quoting Scheme

A quoting mechanism that provides the current market price of underlying assets needs to minimize risks from malicious entities and provide adequate incentives for Quoters to post high quality quotes. Fortuna is equipped with an SVD-based decentralized quoting mechanism that effectively prevents market manipulation from a small number of malicious entities. It also introduces Quote Corporation’s, which use an incentive scheme analogous to corporate governance and equity distribution, thereby motivating Quoters to continuously provide high quality quotes. The mechanism is described in detail in the following section.

2.5.1 The Overall Scheme



1. Joining a Quote Corporation

Each node in the network can become a Quoter once they get QNS verification. A Quoter must join one or more QC's before it can post quotes. A Quoter can query the Fortuna Quote Corporation (FQCT) catalogue to find and join QCs that match the category of quoting services it provides. If no such QC exists, a QC of the new category will be created automatically.

2. Quote Corporations provide quoting services

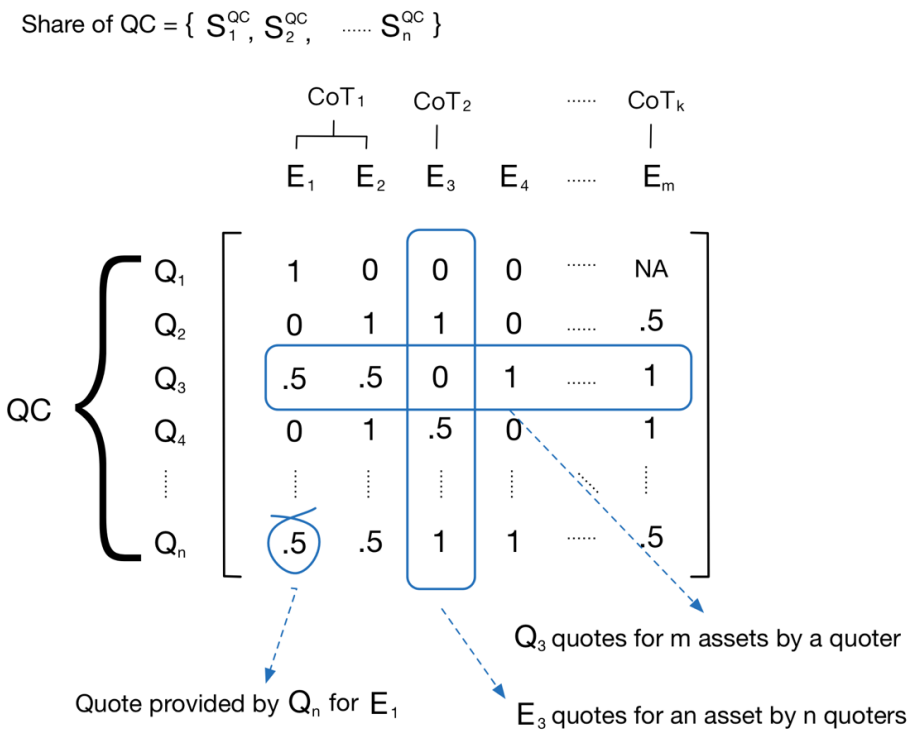
During a cycle, when multiple smart contracts using the same QC's quoting service mature, the Quoters in that QC provide independent quotes. The QC compiles a quote matrix using all the quotes provided for each underlying asset by all the Quoters and obtains a consensus price using the SVD consensus algorithm. This consensus price is used for contract fulfillment.

3. Dynamic redistribution of Quote Corporation equity

After each cycle, the consensus algorithm determines the consensus quote as well as every Quoter's weighted impact during the cycle, which is used as an indicator of the quality of their quotes. Then the QC sets aside a certain amount of equity to distribute among all Quoters according to their weighted impact. This motivates them to actively provide high-quality quotes.

2.5.2 SVD-Based Consensus Algorithm

In each cycle, for a quote corporation that has n Quoters and m underlying assets, an n by m quote matrix is constructed by collecting all the quotes posted by every Quoter for every underlying asset. The quote matrix is illustrated below:



QC：a Quote Corporation

Q_x：the quotes provided by the x-th Quoter

E_y : the quotes received by the y-th underlying asset

S_x^{QC} : the equity share possessed by the x-th Quoter

CoT_k : the k-th contract template

In the quote matrix above, each row corresponds to the quotes provided by a Quoter of the m underlying assets, and each column corresponds to the quotes received by the n Quoters for an underlying asset. An SVD algorithm is applied on the quote matrix $Q_{\mathrm{n}\times m}$ to determine the consensus quotes and the weighted impact of each Quoter:

Assume that there are k eigen values of $Q_{\mathrm{n}\times m}$, λ_{k} represents the k-th eigen values, x_k represents the k-th column of $Q_{\mathrm{n}\times m}$:

$$Q_{\mathrm{n}\times m}x_1 = \lambda_1 x_1$$

$$Q_{\mathrm{n}\times m}x_2 = \lambda_2 x_2$$

$$Q_{\mathrm{n}\times m}x_3 = \lambda_3 x_3$$

...

$$Q_{\mathrm{n}\times m}x_k = \lambda_k x_k$$

Then we can have:

$$U = [x_1, x_2 x_3, \dots\ x_k]$$

$$\Lambda = \begin{matrix} \lambda_1 & \dots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \dots & \lambda_k \end{matrix}$$

$$Q_{n\times m} \cdot U = U \cdot \Lambda$$

Then we can calculate the eigen decomposition of $Q_{\mathrm{n}\times m}$:

$$Q_{\mathrm{n}\times m} = U \cdot \Lambda \cdot U^{-1} = U \cdot \Lambda \cdot U^T$$

Assume there is a group of orthogonal basis$\{v_1, v_2, v_3 \dots v_n\}$:

$$Q_{\mathrm{n}\times m}v_i \cdot Q_{\mathrm{n}\times m}v_j = (Q_{\mathrm{n}\times m}v_i)^T \cdot Q_{\mathrm{n}\times m}v_j = {v_i}^T {Q_{\mathrm{n}\times m}}^T \cdot Q_{\mathrm{n}\times m}v_j = 0$$

Which means ${v_i}^T \cdot v_j = v_i \cdot v_j = 0$

Then

$$u_i = \frac{v_i}{|Av_i|}$$

So we can have

$Q_{\mathrm{n}\times m}[v_1 v_2 v_3 \ldots\ v_k | v_{k+1} \ldots v_n] = [u_1 u_2 u \ldots\ u_k | u \ldots u_n]$

Finally

$$Q_{n\times m} = U\Sigma V^t$$

As

$$SVD(Q_{n\times m}) = U_{m\times m} \times \Sigma_{m\times n} \times V^*_{n\times n}$$

We can have

$d_{m\times 1} = U_{,1}$we take the first row of U

Centralize$Q_{n\times m}$which means calculate the mean value of each column of $Q_{n\times m}$

$$\mu_{n\times m} = J_{n\times 1} \cdot mean_{1\times m}(Q_{n\times m})$$

$$V^{norm}_{n\times m} = Q_{n\times m} - \mu_{n\times m}$$

$$c_{n\times 1} = V^{norm}_{n\times m} \times d_{m\times 1}$$

After normalization, each item of $c_{n\times 1}$ is positive and the weighed sum equals 1.

$$N_\chi = \frac{|\chi|}{\sum |\chi|}$$

Finally we can get N_χ which is the weight of the current result of Q_χ.

Based on this, we get the consensus quotes of Quote Matrix $Q_{\mathrm{n}\times m}$ for the settlement of transactions.

2.5.3 QC Equity Governance and Redistribution

QC equity can be bought by a Quoter upon joining a QC. It can also be sold upon exiting a QC. However, in order to ensure its integrity as an incentive for providing high-quality quotes, QC equity cannot be traded between Quoters. The only channel for it to flow between Quoters is through dynamic distribution after each cycle, which is based on the quality and frequency of quotes provided by each Quoter—a Quoter with better performance will be rewarded with more equity. Below are the detailed rules for distribution:

Quote Corporation Updated Status for E_X

$$N^{QC\prime} = N^{QC} + 1$$

$$C^{QC\prime} = C^{QC} + M$$

$$S_X^{QC} = \frac{1}{N^{QC\prime}}$$

$$S_1^{QC\prime} = S_1^{QC} \times (100\% - S_X^{QC})$$

$$S_2^{QC\prime} = S_2^{QC} \times (100\% - S_X^{QC})$$

……

$$S_n^{QC\prime} = S_n^{QC} \times (100\% - S_n^{QC})$$

Quote Corporation Updated Status for C_Z

$$N^{QC\prime} = N^{QC}$$

$$C^{QC\prime} = C^{QC}$$

$$S_1^{QC\prime} = S_1^{QC} \times (100\% - \Phi) + W_1^Z \times \Phi$$

$$S_2^{QC\prime} = S_2^{QC} \times (100\% - \Phi) + W_2^Z \times \Phi$$

……

$$S_n^{QC\prime} = S_n^{QC} \times (100\% - \Phi) + W_n^Z \times \Phi$$

Quote Corporation Updated Status for O_Y

$$N^{QC\prime} = N^{QC} - 1$$

$$C^{QC\prime} = C^{QC} \times \left(100\% - S_Y^{QC}\right)$$

$$S_Y^{QC\prime} = 0$$

$$S_1^{QC\prime} = S_1^{QC} \div (100\% - S_Y^{QC})$$

$$S_2^{QC\prime} = S_2^{QC} \div (100\% - S_Y^{QC})$$

……

$$S_n^{QC\prime} = S_n^{QC} \div (100\% - S_n^{QC})$$

QC : a Quote Corporation

E_X : Quoter X joins the QC

O_Y : Quoter Y exits the QC

C_Z : the Z-th cycle of the consensus algorithm

M : the amount of FOTA that needs to be paid to join the QC

N^{QC} : the number of Quoters in the QC before the update

$N^{QC\prime}$: the number of Quoters in the QC after the update

C^{QC} : the total amount of funds in the QC before the update

$C^{QC\prime}$: the total amount of funds in the QC after the update

S_X^{QC} : the fraction of equity shares possessed by Quoter X before the update

$S_X^{QC\prime}$: the fraction of equity shares possessed by Quoter X after the update

Φ : the fraction of equity shares used for redistribution after each cycle

W_X^Z : the impact weight of Quoter X after the Z-th cycle

The following is a case to help illustrate the rules described above:

Suppose$M = 1000FOT$ and $\Phi = 20\%$

1. Quoter A paid 1000 FOTA to set up a new QC for a certain category of underlying assets. And it owns 100% of the QC's equity shares.

2. Quoter B paid 1000 FOTA to join the QC. Quoters A and B now each own 50% of total equity shares.

3. Quoter C paid 1000 FOTA to join and Quoters A, B, and C each own one third of the total shares.

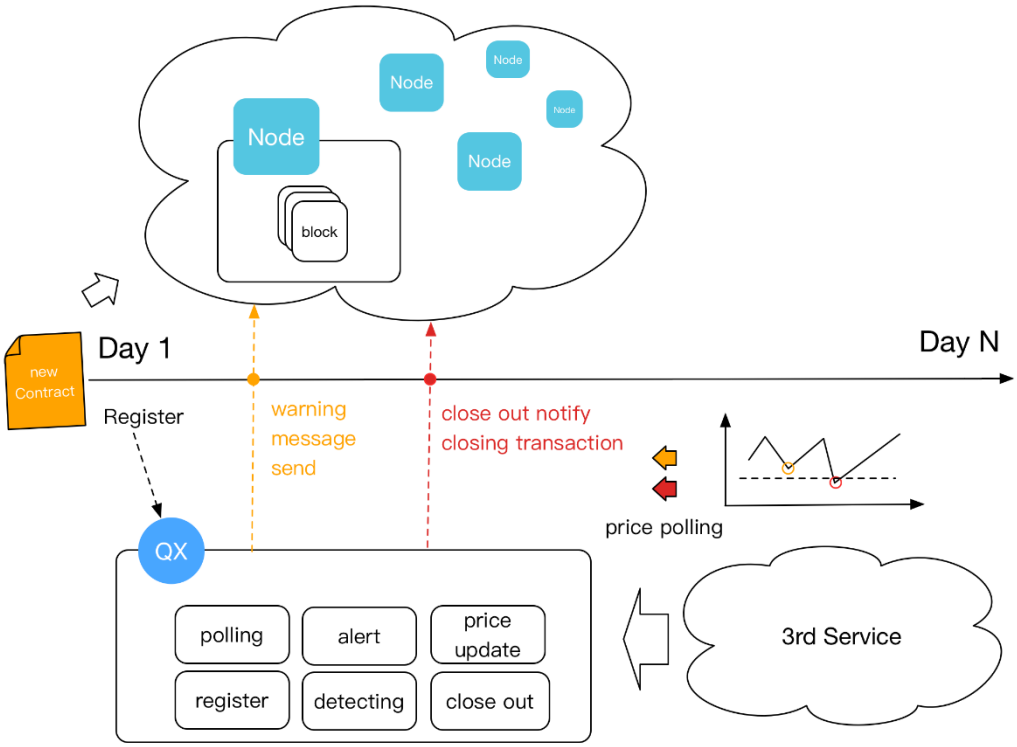
4. Quoter D also paid 1000 FOTA to join. Now A, B, C, and D each own 25% of the total shares.

5. Suppose at the end of cycle, Quoters A, B, C, and D end up with impact weights of 40%, 30%, 20% and 10%, respectively. After the distribution, their equity share percentages become 25%×(1-20%)+20%×40%=28%, 25%×(1-20%)+20%×30%=26%, 25%×(1-20%)+20%×20%=24% and 25%×(1-20%)+20%×10%=22%.

6. Quoter A exits the QC. Upon exit, all of their equity shares are bought back by the QC. Because the QC had a total fund of 4000 FOTA (paid by A, B, C, and D upon entry), the shares of A are sold for 4000×28% = 1120 FOTA. These shares are released to Quoters B, C, and D proportionally. In the end, the fraction of equity shares owned by B, C, and D is 36%, 33%, and 31%.

2.5.4 Continuous Quoting and Close-Out Alerts

There are two types of quotes that a Quoter can provide based on the contract trading structure: discrete and continuous. Under certain trading structures, the trading contract requires continuous quoting services in order to monitor the deposit accounts of both parties in real time and issue alerts when they need close-out. Fortuna rigorously scrutinizes Quoters who provide quoting services to make sure their services is robust:



A Quoter who provides continuous quoting/close-out/alert services needs to closely monitor whether there is any active contract that requires alert/close-out. Let us call such a Quoter QX. Below is how QX functions:

1. QX provides various types of continuous, real-time services, including registration, notification, real-time inquiry, close-out check, etc;

2. QX checks if the current block contains deals that need to be alerted for close-out and write them into the local contract list;

3. QX inquires about third-party prices in real-time and compares them with the alerted close-out prices in the local contracts. If the alert/close-out condition applies, the alert/close-out is executed immediately;

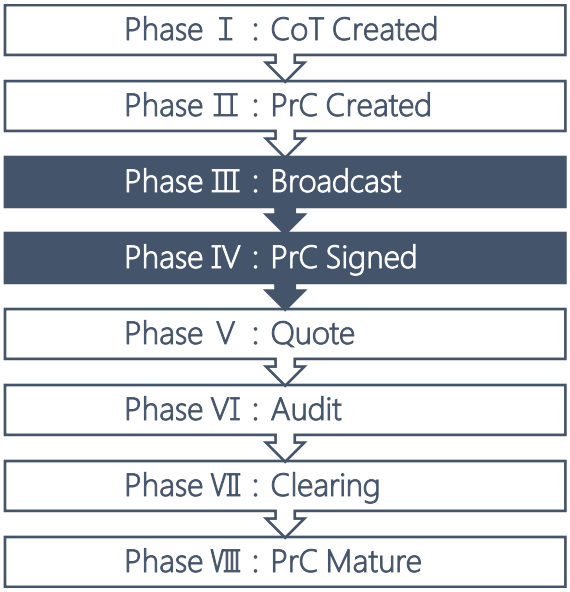
4. The deposit requirement dramatically increases the cost of malicious activities and potentially minimizes them.

2.6 Contract Life Cycle

Depending on their type, contracts will have different life cycles. This section will describe the life cycles of PrC and PuC in detail.

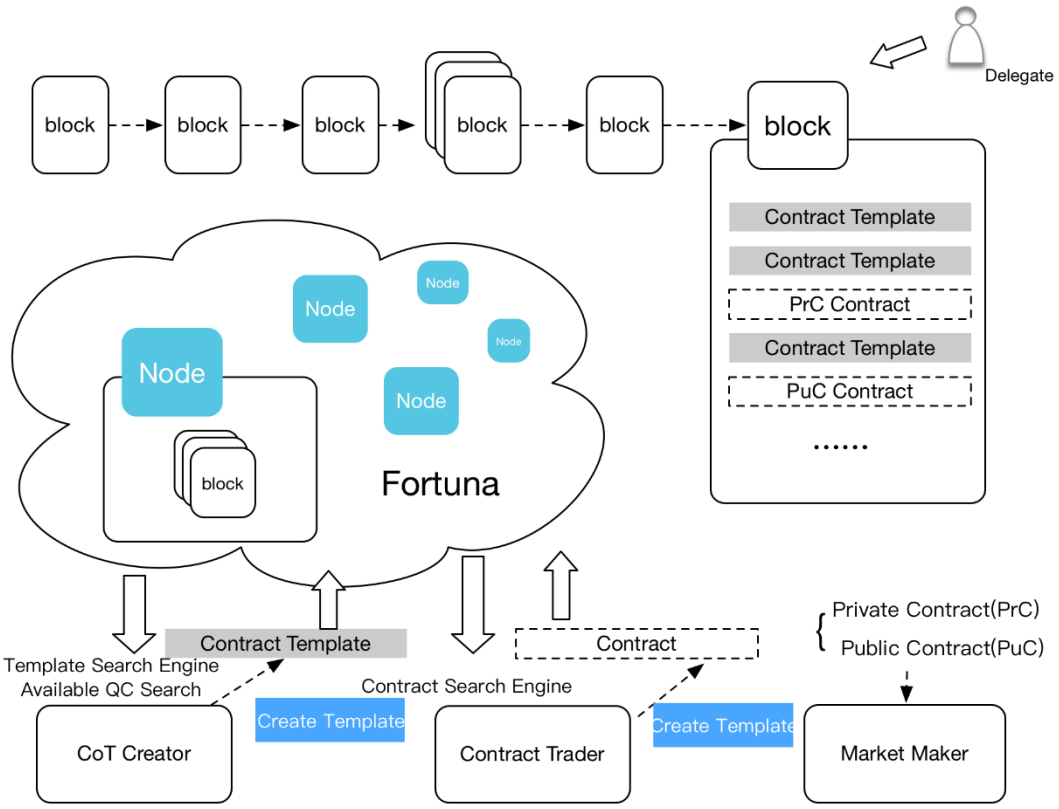
2.6.1 Life Cycle of PrC

PrC is useful for 1-to-1 or 1-to-N customized contracts. Its life cycle is shown in the picture below:



1. CoT Created: A contract template is created by the CoT maker, specifying anchored underlying assets, deal structure and quote corporation. The template is submitted and will be written into a block. Until then, the template will be invisible.

2. PrC Created: Based on the template, a trader will create a concrete PrC, defining key elements of the deal including delivery time, deal price, unit, deposit percentage, contract price, trading direction, etc. The contract is submitted and written into a block. Until then, the contract will be invisible, similar to creating a PrC contract template. Please see the figure below for illustration.



3. Broadcast: Inquiry and quoting are broadcast over the whole network. Parties who are interested in the contract will respond to the broadcast. Inquiry will be broadcast if the trading direction is specified as "buy-in" and quoting will be broadcast if the trading direction is specified as "sell-out".

4. PrC Signed: A party responds to the broadcast and signs the contract with its creator. Following that, each party pays a certain amount for contract fee and deposit, effectively enacting the contract.

5. Quote: Upon the delivery date specified in the PrC contract, the contract will utilize the quote corporation specified in its template and price inquiry for the corresponding underlying assets. The quote corporation will determine a consensus result based on SVD algorithm and provide it for contract fulfillment.

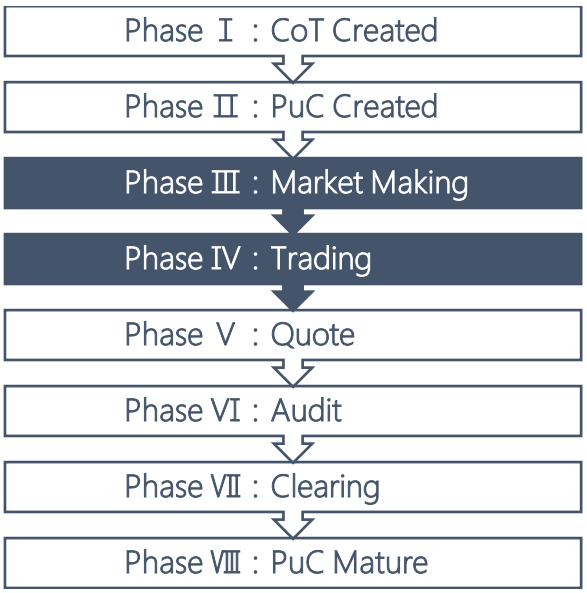
6. Audit: Both parties of the deal need to confirm and agree on contract fulfillment conditions. If either party refuses the conditions, it can request for an audit by all of the nodes in the network. In such a case, price inquiry will be done by all of the nodes, instead of the QC. Note that the party who requested the audit will pay a certain amount for audit fee. However, if the audit is successful, the audit fee will be covered by the QC.

7. Clearing: After both parties have confirmed contract fulfillment conditions, they will clear the deal by paying off their balances. Their deposits will be refunded to them after that.

8. PrC Mature: Upon clearing, the contract finishes its life cycle. In the meantime, Fortuna will keep a record of the behavior of all entities relevant to the contract, which can be used to construct a credit database.

2.6.2 Life Cycle of PuC

PuC contracts are useful for N to N risk hedging deals and require market makers for the deal. Their life cycles are very similar to those of PrC contracts, with some differences in the 3rd and 4th phases. The 3rd and 4th phases of a PrC are broadcasts of inquiry/quoting and contract signing, suitable for direct signing 1-to-1 or 1-to-N customized contracts. However, the 3rd and 4th phases of a PuC provide initial liquidity of market makers and open the floor for whole network trading, which is essentially N to N market maker trading mode.



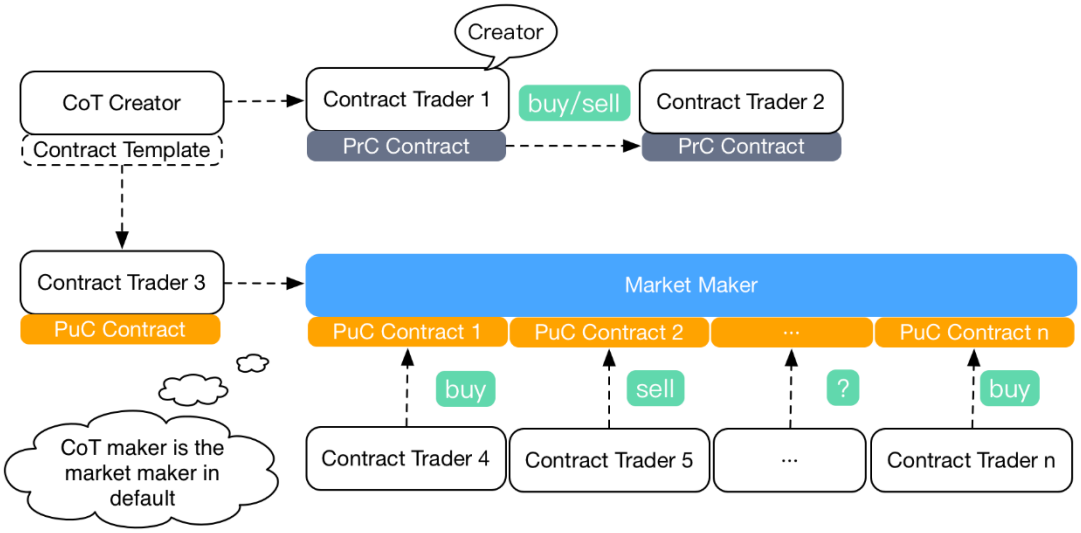
1. CoT Created: A contract template is created by the CoT maker, specifying anchored underlying assets, deal structure and quote corporation. The template is submitted and will be written into a block. Until then, the template will be invisible.

2. PuC Created: Based on the template, a trader will create a concrete PuC, which defines various key elements of the deal including delivery time, deal price, unit, deposit percentage, contract price, trading direction, etc. This contract will also specify its market maker (it will be the creator of the contract by default).The contract is submitted and written into a block. Until then, the contract will be invisible.

3. Market Making: The market maker designated by the PuC pays the liquidity deposit and provides market making service for the deals specified in the PuC. The market maker will

need to refill the deposit account once its balance is too low. The market maker can earn profit through the ask-bid spread of market making activities.

4. Trading: Any user with FOTA on the platform can participate in trading specified by the PuC. To participate, a user needs to pay a certain amount for deposit and transaction fees. The main difference between the life cycles of PuC and PrC contracts lies in the market making and trading phases: the former follows the market maker trading mode, in which all users can participate in trading with market makers, while the latter uses whole network broadcasting for quoting and inquiry. Once two parties are matched during the broadcasting, a 1-to-1 customized contract will be signed between them. This difference is illustrated in the figure below:



5. Quote: Upon the delivery date specified in the PuC contract, the contract will utilize the quote corporation specified in its template and price inquiry for the corresponding underlying assets. The quote corporation will determine a consensus result based on SVD algorithm and provide it for contract fulfillment.

6. Audit: Both parties of the deal need to confirm and agree on the contract fulfillment conditions. If either party refuses the conditions, it can request for an audit by all of the nodes in the network. In such a case, price inquiry will be done by all of the nodes, instead of the QC. Note that the party who requested the audit will pay a certain amount for audit fee. However, if the audit is successful, the audit fee will be covered by the QC.

7. Clearing: After both parties have confirmed the contract fulfillment conditions, they will clear the deal by paying off their balances. Their deposits will be refunded to them after that.

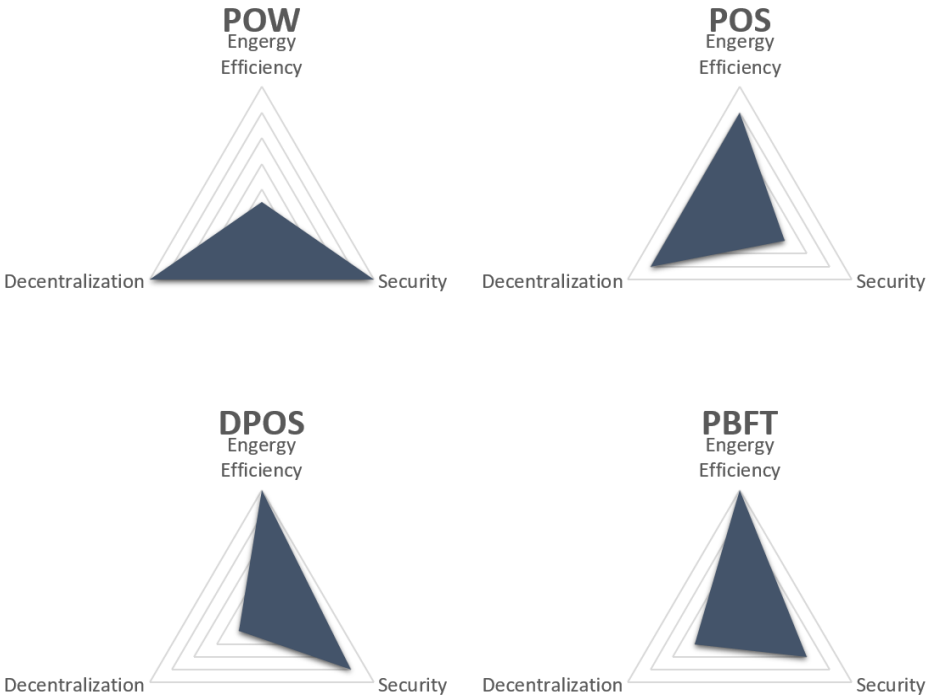
8. PuC Mature: Upon the clearing, the contract finishes its life cycle. In the meantime,

Fortuna will keep a record of the behaviors of all entities relevant to the contract, which can be used to construct a credit database.

2.7 DPOSA Consensus Algorithm

To ensure the security and orderliness of the whole block chain, a block can only be generated upon certain consensus. The consensus algorithm is one of the key elements of a block chain. In terms of the choice of the consensus algorithms, block chains face the same challenge of all distributed systems - the *CAP*[10] principle, i.e., only two of the three following properties can be achieved at the same time: Consistency, Availability and Partition-Tolerance.

Correspondingly, all block chains can only excel two of the following three aspects: energy efficiency, decentralization and security. The commonly used consensus algorithms are POW, POS, DPOS and PBFT. Performances in terms of these three aspects are shown below:



- **POW:** Proof of Work, generates a new block through massive hash computations which result in an appropriate random number. This is most secure mechanism, but it also comes with the highest energy cost.
- **POS:** Proof of Stake, reduces the difficulty of block generation according to the amount and time of tokens possessed, also greatly reducing the energy cost of POW. However, its security is sacrificed and it is susceptible to bifurcation.
- **DPOS:** Delegate Proof of Stake. A certain number of delegates are elected by voting. These delegates will generate blocks in a certain sequence, greatly reducing the number of

verification nodes that are needed. In this mechanism, deal verification is greatly accelerated with no sacrifice of security. However, the system becomes more centralized.

- **PBFT:** Practical Byzantine Fault Tolerance. No token is required in this mechanism, making it suitable for alliance chains.

After weighing all the pros and cons, Fortuna has decided to use an improved hybrid DPOS algorithm for consensus determination, establishing a secure and efficient consensus mechanism. Besides increased centralization, DPOS has another obvious problem: voting rights are controlled by users with more FOTA, marginalizing the roles of those users with less FOTA. To overcome this issue, Fortuna has introduced an active index to reflect how active a user is on the platform. This purpose of this active index is to 1) encourage the active participation of users; 2) balance their financial contribution and activity. The active index is calculated as follows.

$$UL = TL + AL$$

$$TL = N^{CoT} + N^{PrC} + N^{PuC} + N^{MM}$$

$$AL = N^{SA} - N^{FA}$$

UL：user activeness；

TL：trading activeness；

AL：arbitrage activeness；

N^{CoT}：number of CoT created，the CoT must be used for at least one deal；

N^{PrC}：number of deals cleared under PrC contracts；

N^{PuC}：number of deals cleared under PuC contracts；

N^{MM}：number of times serving as a market maker；

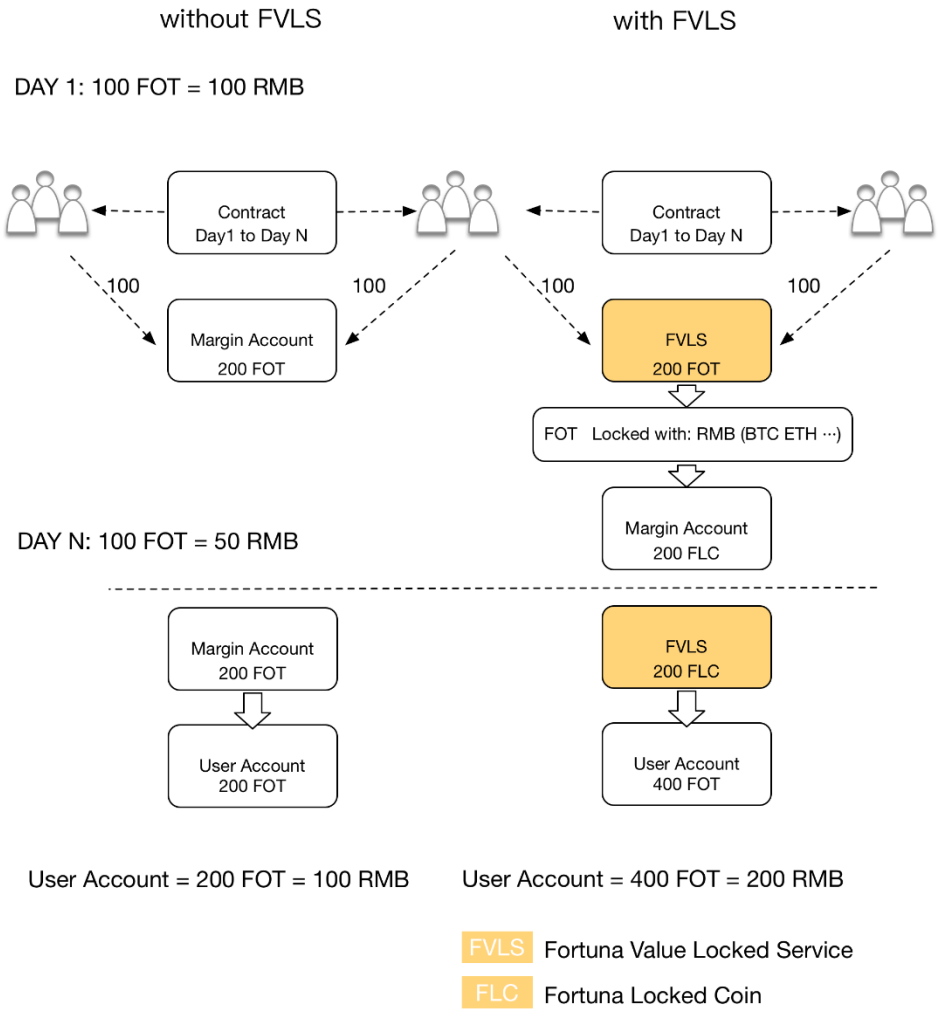
N^{SA}：number of times that the consensus result agrees with the arbitrage result；

N^{FA}：number of times that the consensus result differs from the arbitrage result.

The 101 delegates elected according to DPOSA in each round will reach an agreement on the block generation sequence before the blocks are generated (2/3 of the nodes must reach agreement). Unless more than 1/3 of the delegates collaborate to sabotage the system, no bifurcation will occur.

2.8 FOTA Value Locking Service

As a distributed risk hedging block chain platform, the purpose of Fortuna is to achieve rational risk management through decentralization. However, as a medium used on the Fortuna platform, FOTA is actively traded on the secondary market as a digital asset. It will cause devastating damage to the risk hedging trades if its value is unstable. Therefore, Fortuna has introduced the FOTA Value Locking Service (FVLS) to ensure that risk hedging trades can be completed under stable FOTA value. Using the exchange rate between FOTA and RMB as an example to illustrate FVLS, suppose users A and B sign a simple risk hedging contract: each of them pays 100 FOTA as deposit. A will earn 100 FOTA if its expectation is correct, but will lose 100 FOTA otherwise. The trading modes with and without FVLS are as follows.



1. Hedging without FVLS

In this case, upon the maturity of the contract, and if A's judgement is correct, 100 FOTA

will be earned. A receives 200 FOTA (profit and deposit), but because FOTA devalued 50% against RMB, the 200 FOTA is still worth the same as the 100 FOTA that was paid before the deal. Effectively, user A has neither profit nor loss.

2. Hedging with FVLS

In this case, the exchange rate between FOTA and RMB will be locked by Fortuna until the delivery date of the contract. In the above scenario, when A receives the 200 FOTA, Fortuna will offer 200 extra FOTA to user A in order to offset loss due to changes in exchange rate between FOTA and RMB. FLVS makes sure that users can hedge without being affected by fluctuations of FOTA value.

When providing FVLS, Fortuna will execute trades at the opposite position in the secondary market to achieve dynamic risk hedging and to control overall risk in the platform. A certain amount of fee needs to be paid by the user for this service.

2.9 Compliance Filter

For the purpose of compliance and sustainable development, Fortuna will set up a compliance filter. Its details are as below:

1. Types of filter rules: the categories of compliance filters include ID type (filter based on the ID of a certain contract template), asset type (filter by the type of underlying assets), deal attribute type (filter by a certain attribute of the deal, for example the lower limit of the deposit fraction), and entity type (filter by the entities in the deals, i.e. blocking any deal with a certain entity).

2. Enactment/Invalidation of filter rules: a compliance filter rule needs the agreement of the whole network to be enacted. Certain rules may be rendered invalid under certain circumstances, such as setting up error and reopening.

Upon the enactment of the compliance filter rules:

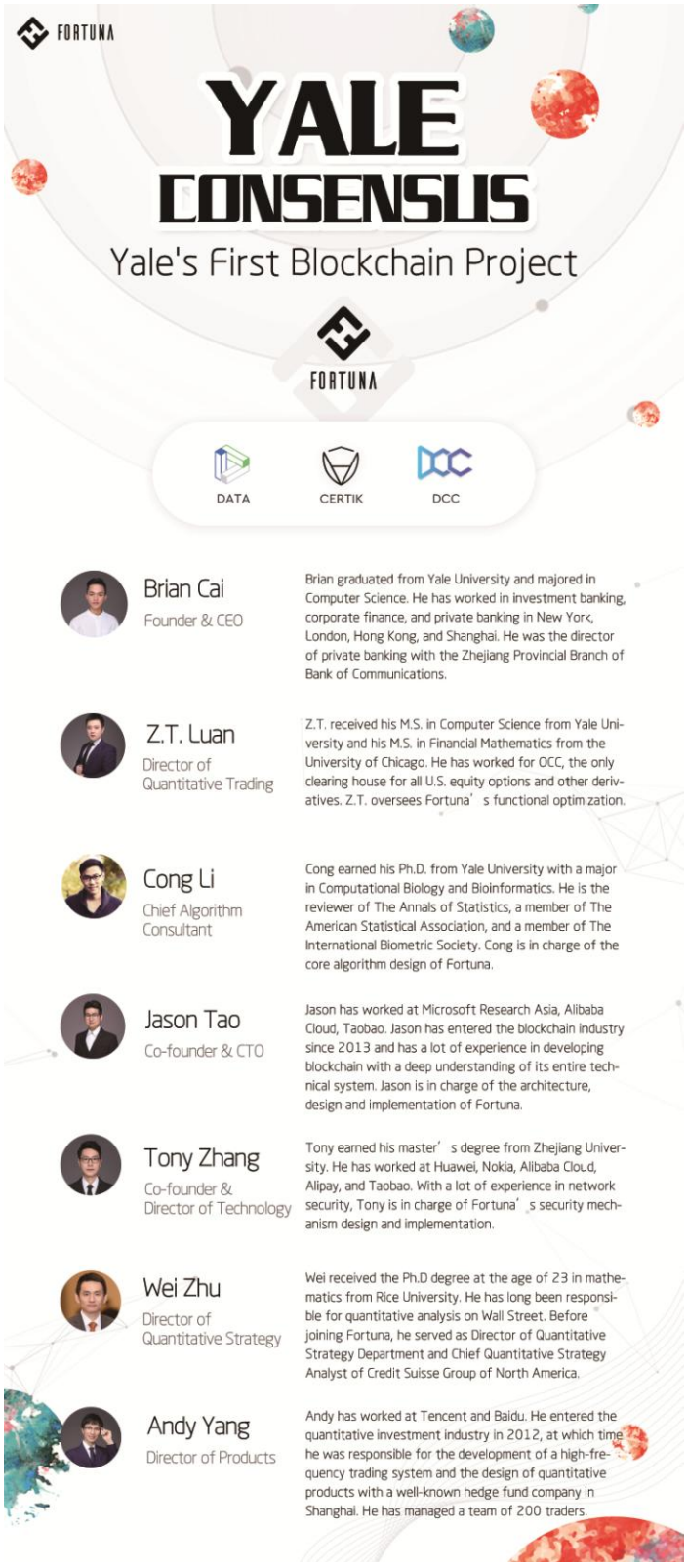
1) Rules will be added into the blocks. Before a new template is created, the platform will query these rules. If any rule is matched, the contract template cannot be created.

2) After each iteration of the compliance filter rules, the platform will scan all existing contract templates. Any template that is not compliant will be removed.

We think that a comprehensive compliance filter system is the foundation for Fortuna's sustainable development. Therefore, as our business grows, we will update this system in a timely manner, keeping the platform thriving on a healthy, lawful and compliant track.

3. Project

3.1 Core Member



Core Member: Brian(Liangbin) Cai

Brian graduated from Yale University and majored in Computer Science. He has worked in investment banking, corporate finance, and private banking in New York, London, Hong Kong, and Shanghai. Before launching Fortuna, he was managing more than 50 billion USD as the director of private banking with the Zhejiang Provincial Branch of Bank of Communications. Brian is in charge of the strategic design and implementation of Fortuna.

Core member: Z.T.(Zuotian) Luan

Z.T. received his M.S. in Computer Science from Yale University and his M.S. in Financial Mathematics from the University of Chicago. Based in Chicago, he has served as a quantitative analyst for large financial institutions and as a day trader for a proprietary trading firm. He has worked for OCC, the only clearing house for all U.S. equity options and other derivatives. Z.T. oversees Fortuna's functional optimization.

Core Member: Cong Li

Cong earned his Ph.D. from Yale University with a major in Computational Biology and Bioinformatics. He has been awarded the Yale World Scholarship and the Yale Graduate Student Travel Award. He is the reviewer of The Annals of Statistics, a member of The American Statistical Association, and a member of The International Biometric Society. With a profound background in algorithm and statistics, Cong is in charge of the core algorithm design of Fortuna.

Core Member: Wei Zhu

Wei received the Ph.D degree at the age of 23 in mathematics from Rice University. He has long been responsible for quantitative analysis, algorithmic trading strategies, pricing, risk management, and other services on Wall Street. Before joining Fortuna, he served as Director of Quantitative Strategy Department and Chief Quantitative Strategy Analyst of Credit Suisse Group of North America. He independently developed index futures algorithm trading platform and pattern recognition model, and intra-day statistical arbitrage trading model, etc. Wei is in charge of the design and development of quantitative transactions and market-making strategies of Fortuna.

Core member: Andy(Jiandong) Yang

Andy has worked at Tencent and Baidu. He entered the quantitative investment industry in 2012, at which time he was responsible for the development of a high-frequency trading system and the design of quantitative products with a well-known hedge fund company in Shanghai. He has managed a team of 200 traders. Andy is in charge of the trading system

design of Fortuna.

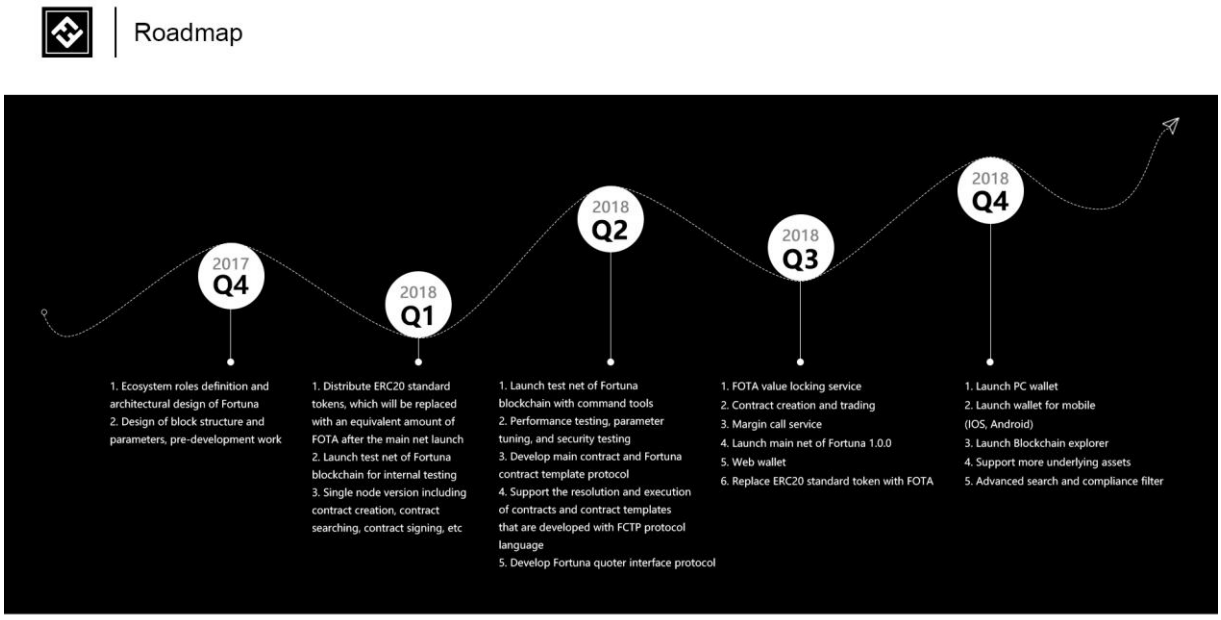
Core Member: Jason(Junjie) Tao

Jason has worked at Microsoft Research Asia, Alibaba Cloud, Taobao, and other famous enterprises. He was responsible for developing the Yun Operating System during the working period of Alibaba Cloud, and he also developed IVR technology and a CRM platform during the working period of Taobao. Jason has entered the blockchain industry since 2014 and has a lot of experience in developing blockchain with a deep understanding of its entire technical system. Jason is in charge of the architecture, design and implementation of Fortuna.

Core Member：Tony(Xiaodong)Zhang

Tony earned his master's degree from Zhejiang University. He has worked at Huawei, Nokia, Alibaba Cloud, Alipay, and Taobao. He was responsible for network security, including the hardware firewall and UTM during the working period of Huawei, and was responsible for 3G and IPoA network transmission during the working period of Nokia. He has been working in the development of the Yun Operating System at Alibaba Cloud and took charge of fingerprint pay implementation for Alipay. With a lot of experience in network security, Tony is in charge of Fortuna's security mechanism design and implementation.

3.2 Roadmap



3.3 FOTA Allocation Plan

FOTA ALLOCATION PLAN		
Proportion	Plan	Detail
40%	Token Generation Event	400 million FOTA will be distributed throughout the token generation event. The BTC/ETH/QTUM/NEO raised through TGE will be used for the research, development, operation, and promotion of Fortuna. If 400 million can' t be distributed completely, the remainder of those FOTA will be allocated in proportion to the community members in attendance, according to the FOTA they have.
30%	Foundation	300 million FOTA will be stored in the Community Foundation, which is based in Singapore. 20 percent will be unlocked immediately after the release of the Fortuna platform. Afterward, circulation-restricted FOTA will be unlocked by 20 percent each year for the following four years. Here, the capital will mainly be used for: • Upgrading and improving Fortuna • Business development • Promoting Fortuna • Creating a FOTA Value Locking Service for clients • The investment, merger, or acquisition of projects or companies for a Fortuna-based ecosystem. Suggest formatting vertically with bullet points and/or as this numbered list rather than having it appear within the paragraph.
15%	Team Rewards	150 million FOTA will be rewarded internally and will be unlocked by 50 million FOTA per year for the following three years.
15%	Marketing	150 million FOTA will be mainly used for general marketing, partnership development, public relations operations, market value management for FOTA, etc.

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