# PHI  CHAIN

**Opening A New Era Of**

**Golden Section**

# White Paper

Phi Chain Labs

phic.app

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# 1. PhiC summary

## 1.1 abstract

PhiC (Phi Chain), also known as Golden Section BlockChain, was founded by PhiC Labs (Phi Chain Labs), led by Dr. Daniela Rus at the Schwarzman Institute of Technology.

PhiC Labs Established in September 2014, it has long devoted itself to the basic theoretical research of the Golden Section and the practical application of the law of the Golden Section. The construction of PhiC main chain began in February 2017. After three years of algorithm optimization and core compilation, the source was opened in March 2020 for the first epoch-making application ——Phi Chain in the world.

Dr. Daniela Rus firmly believes that "the present is the future". After three years of research and numerous verification and inference, PhiC completely abandoned the trust mechanism of POW and POS in the traditional blockchain. The new Merck architecture uses a confusing correlation and verification of ownership, completely solving the limitations of data throughput and consensus mechanism in blockchain applications.

Phi Chain Aiming to empower more blockchain applications through the powerful underlying technology of its main chain. There is little research on the golden division and chaos in the world of the universe, and the emergence of Phi Chain will lead

the crowd into new fields to explore the unknown.

## 1.2 resume

The golden section is to divide the whole section into two parts. The ratio of most parts to most parts is equal to that of small parts to large parts, which is about 0.618. This proportion is recognized as the most aesthetic, and is called the golden section. The golden division has strict proportionality, artistry and harmony, and contains rich aesthetic value. This proportion can arouse people's beauty and is considered the most ideal proportion art in architecture. Golden Section Blockchain (PhiChain) is a high-speed, secure, scalable blockchain infrastructure platform public chain project. We're going to spread out the application. Provide unlimited data storage capacity, realize multi-chain data collaborative storage, cross-chain data management, data privacy protection, data holding proof, distributed intelligent computing and other services.

In addition, fragmentation technology serves as the foundation service of the blockchain, providing millions of requests (RPS) per second and can grow as the size of the system expands; and beyond. PhiChain Redefine the blockchain storage industry, business model, economic model, ecological strategy and governance structure with unique technology, so that blockchain storage can break through new developments and develop other blockchain storage systems. Provide the key

roles.

Phi Chain By using the Merck algorithm developed by MIT, the ability of parallel data volume and data analysis to a new order of magnitude: ms (milliseconds) per million, which means that blockchain technology has entered a new era. The Merck algorithm greatly improves the efficiency of the blockchain application layer and solves network congestion and high fees. In other words, it can be compared to this: the progress from analog signals to digital signals in the history of radio communications. There have reason to believe that in the world of quantum mechanics, there will be a large number of PhiC based applications being created.

Phi Chain PoAC was introduced in the consensus layer, full Proof of Accord-callback. This mechanism is called the consensus callback consensus mechanism, which encountered a verification occlusion BUG during the master node upgrade in 2021, causing irreversible block confusion and closed block cycles. We rewritten the original framework and used a new consensus mechanism: POR, the full name Proof of Result.

## 1.3 Consensus mechanism

The Golden Section Chain-Phi Chain (short: PhiC, currency symbol: φ) is a network currency based on peer-to-peer (peer-to-peer) technology. It is also an open source software project under the MIT / X11 license. It helps users make instant payments to anyone in the world.     Phi Chain Inspired by Byzantine fault tolerance in blockchain, the establishment of trust mechanism with Merck + PoR. This means that in the decentralized network, anyone will become a node, acting as both the credit granting and the credit. Compared with other mainstream block technologies, Phi C has a larger data carrying capacity and data mining capacity. The creation and transfer of the Golden Section (Phi Coin) is based on an open source encryption protocol and is not regulated by any central institution. Similarly, the credit signature of the golden division chain is not subject to any central organization, and the mutual certification logic from the pan-node makes the token trust more simple and rapid.

## 1.4 Consensus and distribution mechanisms

### Traditional data storage

The distributed storage of traditional blockchain is that each node stores a full amount of data and stores the data of the whole blockchain. The data stored by multiple nodes is the same.

The data of the blockchain has as many nodes in the system. The entire system jointly maintains multiple backups of a set of data. The the system will not be affected by data damage and loss at a node.

## PhiC, for data storage

PhiC does not fully backup all the data to every node. Instead, the key point information is confused and the encryption is randomly stored by each node on any node. This means that in the case of data can not be tampered with, the lightweight of mutual communication is achieved. This means that you don't have to waste a lot of time synchronizing the ledger information, and you need only eight times to confuse the key verification to confirm the block height of the current network and whether the current transaction status is legitimate.

## Traditional consensus mechanism

In PhiC's view, the consensus mechanism of the traditional blockchain is designed to meet the use requirements at the beginning of the design, within a certain period of time. However, with the development of the blockchain network, different consensus mechanisms have different drawbacks. This drawback is not noticeable in the early stages. The consensus mechanism of BTC is w, and the pow network needs a lot of computing, which is bound to bring a lot of energy consumption,

which is obviously not green enough. ETH network will switch to POS consensus mechanism in the later stage, and POS consensus mechanism will obviously cause the hoarding of tokens and slow liquidity, which is also the resistance to the development of the next generation of blockchain. That is, when the blockchain network carries too much service, there will be a bottleneck for so many nodes on the network to maintain the same set of data.

For example, node 1 to store a new data after data A B node 2 to store a new data C after data A we eventually have to maintain the same set of data

So does behind A store B or C? How do multiple nodes agree on such issues?

## So this is how bitcoin works

Many computers run Bitcoin's client program and run the client program, and this computer becomes a node in Bitcoin's P2P network. These nodes constantly collect bitcoin transfer transactions from the network, and also broadcast the data to other nodes. Each node is collecting transaction records, and it is also calculating a difficult math problem. When a node works out the answer, it will package the transaction data it collects into blocks (blocks) and broadcast the block on the network for all nodes to check and store. In this way, all the nodes jointly store the same set of block data, which, in the order of generation, form a chain-> blockchain. Some nodes of such a system will not affect the overall operation of the system, nor will they lose data. Without the center, it is very difficult to be manipulated by the center.

The idea was good, but the huge amount of data and the network synchronization time took bitcoin tens of minutes for each transaction. After PhiC Labs compared the massive data, it was found that the real trust mechanism is to solve the problem of trust between samples, rather than having a complete ledger in each client. Decentralization by centralizing all people is inefficient and not developmental.

*"To trust the keys: so we give each key tens of millions of locks. "*

This is obviously very stupid.

# Phi Chain Consensus mechanism

PhiC decided to improve and innovate on the basis of the original PoA trust mechanism. PhiC's unique sharard technology divides the irregular ledger into several sections by authoritative verification, and labels the broken ledger and distributes it to each node. After each node gets the split ledger, the current block is marked as Mark A and signed Sign A for it. When the data in Mark A passes 8 times of confusion key verification and Byzantine fault tolerance verification of ownership, the signature hash Sign A of Mark A is secondary signature hash SignB, and the data confirmed in a certain time is packaged as Bag A and the new signature hash Sign C is obtained. From this, each user only needs to verify the hash accuracy of each signature to obtain:

*The above packaged transactions can be trusted!*

So the problem is, the above algorithm solves the authenticity of the data. But if you need to plug in the full data record and the retrieval process will be slow.

Due to the existence of hash data signatures, each completely cut ledger has a head and a trace to follow. By dyeing and combining the data to be retrieved, we can quickly find the trusted distributed ledger from the vast sea of data. After verifying the signature and the consistency of the data, the data is verified for 8 times and sends the results to the users.

Similarly, when a certain account book is missing, you can also find at least 3 credible data of honest nodes through the signature before and after the stamped copy, and complete the self-replication and repair of the branched chain. A major contribution of PhiC to the blockchain is that it makes the blockchain have a faster confirmation speed, faster retrieval time, and at the same time have the ability to improve and repair itself. This means that since the opening of the Phi Chain main chain, it will exist forever, with the development of the entire computer history and the progress of human beings.

This is also the technical feature of the entire PhiC public chain:

*Symmetric, sustainable, and infinite*

## 1.5 Distribution summary

Token name: Phi Coin Brief: PhiC

symbol:φ

Developer: PhiC Labs algorithm: Merck + PoR

Quantity: 84,000,000 (including 4,000,000 frozen, remaining
80,000,000 is available through mining)

## 1.6  Main network construction

PhiC Labs The original intention is to improve the logical layer technology development of the whole PhiC public chain by a group of fanatical technology developers, and solve the unreasonable phenomena in the secular society, and find a more efficient human cooperation method and on-chain credit mechanism. From the power level, more and more owners of vested interests rely on dishonest means to maintain their dominant position in the human society. On the economic level, fiat money is increasingly becoming a tool to exploit the means of production and integral coupons to dilute wealth. From the philosophical level, worldly wealth has become the incentive bait that drives individuals to struggle for their whole life, making people lose their search for themselves. We start to choose the color that others like, over the color that we like. In other words, regardless of skin color, race, regardless of age and occupation, are gradually falling into the class trap. And class has become a big mountain hindering the progress of human scientific civilization. We play as miners in real life, but the value we create

is constantly being diluted and never allowed to be the means of production. The most important difference between humans and other creatures is the innate mental talent and the skills acquired later.

*"We prefer talent, relative to skill."*

We are all glad that blockchain technology has been greatly proposed, which enables the birth of a more transparent and efficient contract with rules. The contract logic will be proposed by the 24 superdelegates in Phi C's rotation and approved through a vote by all Phi C miners. This represents that PhiC will serve as a separate network parallel to the secular as well as other main chains.ad locum:

## *Miner Depends*

The development of the golden division chain (Phi Chain) will go through four stages, namely, Origin (origin), Lighthouse (pharos), Galaxy (Galaxy), and (Mobius). The focus of the origin stage is mining. The global PhiC miners will dig most Phi Coin in the Origin network. PhiCoin will be the base currency of the public chain and appear in all the application scenarios of the public chain, supporting the operation of the whole PhiC main chain. In the second phase of the Pharos network, PhiC will provide more basic applications, and open some public links for users to conduct blockchain development. At the same time, you

will be able to deploy complete PhiC nodes on your computer to participate in the construction of the public chain and serve the whole network. In the third stage, the Galaxy network will be fully open, which means that the applications on the blockchain with different chains, different consensus mechanisms and different advantages will be able to complement each other. You can connect the whole block world through Phi C and realize the leap from the blockchain to the block network. And Mobius network will be the final form of PhiC public chain, which means that blockchain technology has become a mature technology to serve all mankind, to achieve the real openness, transparency, decentralization, for the birth of blockchain, to the continuous exploration of blockchain projects to draw a perfect end. This is the answer to the golden section:

<p align="center">*"Proof Of Result"*</p>

PhiC Labs The prototype development of the action actuator was implemented when the Merck universal logic layer was released. We define the compilation principle of this generality as Ator. In the exploration of Ator, we will become the first public chain in the blockchain to independently implement the flow processing standard. This will include the five basic definition categories of verification, creation, transfer, exchange, and destruction. With PhiC's Ator, you will be able to create unlimited possibilities. PhiC will rely on the Ator compilation principle to

rewrite the implementation methods of accounting, reading, long connection and flow, which will greatly improve the throughput and power of the PhiC network. The idle stock computing power on the chain will be liberated. What we want to achieve is this:

## Blockchain to Blocknet

We pursue a flatter and more multidimensional block network, which is also the underlying logical support for the PhiC public chain to realize ledger segmentation and label indexing. At the beginning of the design, Phi C had no block height, but was presented in the way of block coordinates.· We believe that a real block is a Rubik's cube structure, not a straight line. That goal will be something that PhiC Labs will continue to explore over the next decade. We think we know what unicorns look like, but that doesn't mean we can find unicorns.·

In the original Phi C 1.0 network, we adopted a distributed mining means, with a smart phone, you will be able to dig for free anytime and anywhere! Miners can continuously upgrade Origin mining machines by accumulating Phi Coin to produce more PhiC. At this stage, PhiC Labs will also try the application of public chain technology, which is incredible if you are lucky enough to participate as a miner. PhiC Labs He will also become the forerunner together with the original miners, finding the

known in the unknown and finding the root of all things in the infinite mystery of the universe. We will never forget the exploration and contribution of the prophets in the original PhiC network. The version 1.0 code name will always be remembered:

*"origin"*

We modified the consensus layer in Phi C 2.0 to interoperate on different chains by using heterogeneous consensus sets. We have completed the development of cross-chain validator, cross-chain bridge, cross-chain lock, and conducted the final packaging testing of distributed ledger containers, distributed broadcast streams, and smart contract trees. You will be able to feel the wonders of the new PhiC app. This is the iconic day for blockchain to move towards block networks. We define the 2.0 version as:

*"lighthouse"*

This will be a new era.

## 1.7 manage

**equal**

Management is a means to improve the efficiency of human collaboration, and the two elements needed for collaboration efficiency are consensus and the rules generated by consensus. Fortunately, the invention of the computer allowed the rules to be encoded and recorded on the hardware. The emergence of the network enables different information to be copied,

exchanged and transmitted according to certain rules. When more and more workflow and production models are transferred from real life to the chain operation, they are supervised by the broad consensus of the operation and algorithm constraints, and this process is called algorithm autonomy. In the informal and subjective consciousness of the secular governance, injustice will inevitably occur. And these injustices are not even detected by you, or people will subtly accept the inefficient and opaque management process. This has greatly affected the progress of human civilization and the prosperity of the earth. Therefore, we call for the equal power of governance to the governed public. This is the original intention of Phi C to realize autonomous management:

*Equa l*

PhiC recognizes that assets and ideas are the products of human productive labor. There is a circulation law of production, holding and reproduction. The POW algorithm derived from producer governance has the disadvantages of high energy consumption, low efficiency and not green enough. However, the POS algorithm derived from the holder governance has the disadvantage of capital concentration and poor liquidity. And the means to really improve the efficiency of production and management is always the link of reproduction. This process of reproduction discovers new properties and applications of material products and greatly changes people's lives. We call it:

*inventor*

Phi Chain To give the average distribution of governance power to all token holders, a process called equality. After equal rights, the miners who are brilliant and active in the construction of the PhiC application layer and the community autonomy will become inventors, that is, the application layer manager. All miners will have the same and equal vote. The block generators are given limited and supervised authority to freeze accounts, update flawed applications, and propose changes to the underlying protocol that maintain the operation of the entire PhiC network. The holders of the token are given the right to regulate the circulation market to maintain the market value of the entire project and distribute the profits from the transaction rate. Block reinoreers are given the right to publish the application layer and share the entire PhiC ecosystem, enabling new value in DeFi, DeBank, and even more Web3.0 applications. And this process, we still think, can only be achieved under the efficient division of labor and consensus management of PhiC.

In the development of PhiC public chain technology, the Phi Chain system will be handled by 24 super representatives to review the draft and vote on the miners' proposals. Each region will be responsible for community autonomy, empowering and motivating each miner. The election of block generators will be held once a year, and this process will follow the voting opinions of all token holders to safeguard the interests of the vast majority of token holders. The superdelegates will consist of 13

block generators, seven token holders, and four PhiC Labs members. We will publish their contact information on the official website before the main website of Lighthouse lighthouse. You can feedback any ideas and suggestions and communicate with them.

## panel point

The PhiC node refers to the information collection point formed through the block network topology. In a broad sense, each user can also be called a node. With the different functional attributes of nodes, different establishment time, and different scope of service, it will be divided into many types. It is the nodes that constitute the entire Phi Chain block network, thus ensuring the smooth operation of the decentralized network. Depending on the composition and function of the nodes, the following categories can be provided:

1. Main node: it aims to distinguish the region as the main node radiating the corresponding region. At present, the world is divided into eight nodes: South America, North America, Europe, Asia Pacific, Central Asia, South Africa, Australia and the Atlantic Ocean

2. Step node: All users before the first production cut belong to the meaning of the first echelon node.

3. Broadcast node: a node that is always active in the Phi

Chain network and always active in the corresponding Phi Chain community.

4. Trusted node: refers to the active nodes in some honest nodes that can be used to assign signature verification, assume the function of error correction and data repair and assign signature verification, and also have the corresponding error correction reward node.

## major node

In the Origin network, we have completed the construction of nodes around the world and established 277 hierarchical regional nodes around the world. After the Pharos network mapping, the node identity is also synchronously mapped to the Pharos network. Pharos The main network has 8 main nodes responsible for blocking and broadcasting. In the Pharos architecture design, the main nodes can be expanded to 64. The regional node is responsible for synchronizing the main network information and verifying the fragmentation information of the secondary nodes to realize the function of collaborative communication and verification of the nodes. Pharos When the graded regional nodes complete the transaction verification on the main network, they can get the verification reward and get the transaction tax dividend. This reward can also be enjoyed in cross-chain decentralized exchanges and centralized exchanges. In the Galaxy network, the regional nodes will be able to

upgrade the broadcast nodes,

## Encouraging and autonomous communities
*Search for the 3,000 founding volunteers who will change the world*

PhiC's consensus preaching and dissemination of ideas cannot be separated from motivational autonomous communities. As one of the important organizations of PhiC, the incentive autonomous community is responsible to popularize blockchain knowledge for participants, introduce the PhiC consensus mechanism, and explore the positive effects of more discoveries. We welcome volunteers to participate and join in the process. At present, after three years of development of the Origin main network, Phi C has 1,047 independent autonomous communities in the world. PhiC thanks the first mover for their contribution and efforts to the development of PhiC in the original network. In the Pharos main network, 20% of the transaction tax will still be used for incentives for autonomous communities. We believe that under the leadership of PhiC Foundation, there will be a universal blockchain community that truly realizes the same identity of the amoeba architecture that will bring PhiC into the first echelon.

Autonomous communities are different from the traditional centralized management, banning the traditional top-down governance model and replacing the bottom-up governance model. With the community incentive at different stages, unite all the developers, miners, currency holders and users in the

community to provide continuous guarantee for the common concept of PhiC public chain. The incentive system will be composed of air drop, fee dividend, NFT, DeFi credit limit and other areas. We also believe that the real motivation and feedback comes from the power of dreams. As a result, we look for 3,000 volunteers to change the world, and we will share, update our knowledge, and eventually receive the most valuable reward: PhiC.

PhiC incentive autonomous community volunteer recruitment criteria:

Sense of identity, initiative, competence, and equality

PhiC Incentive autonomous Community volunteer work content:

Spread consensus, improve cognition, respond to proposals, and build ecology

# 1.8 market house

PhiC Labs Believe that the early market operation will introduce a large number of speculators' attention and speculation and hoarding too early, leading to the concentration of PhiC and poor liquidity. The power of capital will greatly affect the enthusiasm that technology renewal brings to people to explore the future. This makes PhiC's exploration more like a game rather than a mission, which is not our original intention. But we still embrace the market, and we also believe that PhiC should be redeemed in any exchange or exchange pool, otherwise the new miners will have no way to get it!

At the same time, the Phi C token will be next difficulty upgraded on October 15,2022, when 97.5% of the token will be excavated. Therefore, before opening the main network, we put cross-chain and trading on the agenda. This means that after seven years of intensive technology development period and two years of mining period, PhiC will enter the rapid development period of the market in the next two years. This work will be undertaken by Dr. Asilon Marvin, who will simultaneously preside over the independent development of the PhiC Foundation.

PhiC Labs It will also provide PhiC Foundation with a digital currency of at less than $3,000,000 to support the foundation's development and market operations. This portion includes 1,000,000 USDT and BTC, ETH and other assets that may be used

in phase 2.0 liquidity additions. The 4,000,000 PHICs held by the lab will also be stripped to the PhiC Foundation and unlocked. This move will separate the PhiC technology stack and the Marketing Department, in a sense, as an attempt to decentralize the self.

It should be noted that PhiC Foundation is a for-profit organization, and it is not desirable or credible that the market department of a project is not for profit. We will realize value returns through Defi and Debank, which will be used for marketing activities and internal members of the foundation. PhiC Foundation It will be composed of PhiC community members from around the world. Based on the principle of openness, we welcome any miner to join, discuss and explore the market future of PhiC. The member election campaign will be held in June every year through blockchain voting every year. Look forward to your arrival!

## business

Phi Coin The flow should be free and smooth, anyone or organization in the PhiC trading module opened, will not be able to prevent the free exchange and flow of PhiC. We also strive to improve the payment ecosystem of PhiC's payment. In the near future, you can see that PhiC aggregates code scanning can sell real-time exchange rate conversion and directly scan or NFC fast payment through Paypal, ApplePay, Alipay, VISA, Wechat and other international mainstream payment channels.

A new income and expenditure settlement platform without national boundaries is the dawn of the future payment industry. And Phi Chain's data capacity of millions of times per millisecond makes it all easier. At the same time, we are exploring the field of big data and global resident credit payment, and the planning and development of PhiCard credit credit cards and leveraged transactions are already on the way. Noi credevamo:

*"The future is the present."*

PhiC Foundation Will be independently responsible for PhiC's market operation and transaction scheduling. We will complete PhiC's decentralized trading, cross-chain trading, centralized exchange exchange, and fiat exchange business at the appropriate time. At present, PhiC cross-chain bridge and cross-chain Swap have been developed and deployed, and are available. But we still need the support of global nodes and miners to ensure Phi C liquidity. Since PhiC tokens are now largely scattered in the hands of initial miners worldwide, the foundation's share is only 3.57%. Therefore, the trading process of PhiC cannot be separated from the support of the miners and the spontaneous mobility addition of the community. When the foundation's holding of tokens is not enough to complete the next phase of the transaction plan, the foundation does not rule out the PhiC repurchase in the secondary market to meet the cross-chain demand for the number of Phi C.

PhiC will first launch decentralized exchanges for trading pair

building and across chains. First, the support for BSC, ETH, TRON, Solana, polygon, KCC, FTM, Cronos, xDAI will be completed, and the specific schedule will be disclosed to the community in a timely manner.

Across the chain to BSC, Pancake is the first stop of the official launch of the transaction landing, PhiC Foundation is responsible for raising additional liquidity, of which 600 BNB is from PhiC Labs's capital injection payment to the foundation (hereinafter referred to as its own assets), and the corresponding amount of Phi C will be composed of the foundation's own assets and the assets raised together. It is important to note that this initial liquidity will be permanently locked in to support PhiC's value precipitation and great vision. Across the chain to ETH, Uniswap, as an important part of the blockchain ecosystem, is used to connect PhhiC with other mainstream digital currencies. Among them, 200 ETH came from PhiC Foundation's own assets, and PhiC was raised internally through the foundation. This initial liquidity is also permanently locked. Cross the chain to TRON, establish PhiC / USDT trading pairs in Justswap, and open the low-rate stablecoin exchange channel of decentralized exchange.

When appropriate, the foundation tries to conduct a centralized exchange, and we should promptly disclose our progress to the public at the beginning of the process.

# 1.9 apply

**APP**

Phi C 2.0 is also the function of the open lighthouse network for testing and intelligence gathering for subsequent development, and the test data of the lighthouse network will be permanently retained and exist as the original main network for a long time.

PhiC Lighthouse network has tried to develop the DeFi field through smart contract trees and boundary servo transactions, which marks the possibility of decentralized banking and decentralized lending. Users will be able to package the relevant agreements and release financial products, showing us the future of P2P. At the same time, with the open evaluation of leverage and risk and procedural flow processing, PhiC will have strong potential in the field of stable investment products and digital asset lending. In other words, Debank makes it possible for everyone to open a bank, and provides you with a holistic solution. You don't even need to know the code!

*Chat*

The PhiC Lighthouse network will provide a session manager and a visual development platform for distributing broadcast streams. Unlike existing communication software communication

principles, conversations based on PhiC Chat will not rely on any servers or nodes. PhiC breaks the Client to Server to Client and realizes the decentralized chat architecture of Client to Client through the real-time servo of the dynamic domain name and the target machine ip. In addition, the end-to-end communication content is encrypted by the private key of the dialogue opponent at the beginning of the communication establishment. This means that the communication process is completely anonymous and unmonitored. You can experience it in our upcoming PhiC Chat!

## *Wallet*

The PhiC Lighthouse network also provides a wallet application based on the Phi C public chain distribution. This is not a simple wallet software, but an authentication system used in the blockchain world. After the distributed ledger container and Redis-Stream, PhiC Wallet will enable users to easily coin, liquidity, and transaction Kanon the PhiC public chain. All of these functions is done without any code base. At the same time, PhiC Wallet will support 28 major chain cross-chain transactions and mixer coins. This has been put on the agenda, and is now being implemented in the process.

## *Validator*

The application of PhiC lighthouse network consensus set technology has pioneered the use of decentralized universal validator. In the first phase of our development, we completed the integration of the validator, ownership validator, aging

validator, and credit validator. This means that identity, ownership, timeliness, and credit have a weight that can be marked, and then can achieve intelligent verification. This is a major technological advance in distributed computing and distributed storage. I believe that in the near future, we can achieve cumbersome password management, credibility management, traffic management, license management simplified to an easy operation. Back to the source, this is also the core of PhiC lighthouse network, is also the blockchain to solve the problem, he is:

<div align="center"><em>"Consensus mechanism"</em></div>

## Dapp

<div align="center"><em>Mapping</em></div>

PhiC Mapping Is the Dapp running on the PhiC lighthouse network, which can help users to easily map the accounts in the Origin network to the Pharos network. As the vast majority of PhiC is excavated, the Origin network will be turned off, and the assets in the original network will be mapped to the Pharos network for users to transfer and cross-chain transactions. Pharos As a cross-chain bridge and long-term operation of the

main network version, it will remain permanently open, providing roles including but not limited to frame support, application support, and consensus layer support.

After the user maps the account to the Pharos network, the Origin network marks the mapped address. Data from its accounts will be transferred lossless to the Pharos network. Be sure to keep your private key in the Pharos chain. Your identity is not transferable until the NFT and Store are open.

## *Bridge*

PhiC Bridge At present, it has realized the cross-chain of 28 mainstream public chains, including ETH, BSC, Terra, Avalanche, Solana, Tron, Polygon, Fantom, Arbitrum, and Cronos. With PhiC Bridge, you can trade assets on any chain across the chain or apply them across the chain. We will gradually provide and support more public chain networks under the condition of ensuring network security.

PhiC Bridge Is a great attempt of PhiC in multi-chain, cross-chain and fusion chain plates. For the first time, PhiC uses the consensus set, consensus bridge, and consensus protocol lock to find a breakthrough from the consensus layer and improve a major technological innovation in the construction of blockchain infrastructure. Different from the application layer CrossChain, when the user conducts cross-chain operation, the affirmative voucher will make a consensus handshake. Any unsafe, unaudited public chain, not whitelisted by the PhiC Pharos network will be rejected during the handshake session. This is an era of integration, in this new era:

*Farm*

PhiC Farm V1 Is a set of transaction tax incentive system built on the transaction tax. A portion of the transaction tax will be used as a farm reward, and you can put the idle PhiC into the farm to get the maximum revenue. Currently, the lock time of the preset reward pool is divided into 14days, 3 months, and 1years. After the reward pool is established, you will pledge the farm single currency within the end time and get the pledge certificate. Upon expiration, you can retrieve the pledged coins at the farm and collect the reward. The reward pool will send the reward PhiC according to the proportion of your input farm PhiC to the total input farm PhiC.

The amount of reward for each reward pool is determined. The Farm system will calculate the share of the reward pool in real time and provide a currency-based annualized revenue reference. It should be noted that this amount is variable in real time, and only an accurate income expectation is obtained only after the reward pool is closed. In Farm V1, the PhiC you pledge will be used as a matching lender in the DeFi trading market. When the customer margin is insufficient, the smart contract will be forced to ensure the safety of the pledged funds. The PhiC put into the farm is not damaged.

PhiC Farm V2 Is a set of aggregated reward systems built on

DeFi fees. Unlike V1, he offers an additional option of multi-currency pledge. The commission fee reward system will calculate your share of the reward pool in real time, which means that you will be able to join or exit the reward pool at any time. From the moment you join the reward pool, you can enjoy the Farm revenue. In a multi-currency pledge, the price of crypto-based assets may fluctuate, and the greater the volatility, the more buying and selling orders, and the more fees you charge as a liquidity provider.

## PhiC Studio

PhiC Studio Is a visual aggregation blockchain workbench, which can help you quickly switch on different blockchain public chains for development. You don't need to have any code base to issue coins, contract writing, and add liquidity. You pay minimal Gas to complete project development and application launch. We provide publisher, Weber, Dapper, Swaper, Slider, 5 basic components for free use. He can help you quickly build blockchain projects, and easily migrate the real life work model to on-chain governance.

PhiC Studio Also covers Charts, Audit, Analyzer, Eyes, Tools and other sectors, and is compatible with the analysis and monitoring of 28 mainstream chains. Anyone can build a logo library to analyze the massive data of the blockchain and analyze the big data. At the same time, as the core application of the

lighthouse network, PhiC Studio will allow you to access the lighthouse computing center nodes through your mobile phone to complete massive computing tasks and distributed computing programs.

In the development of Blockchain to Blocknet, PhiC Studio plays a key role, providing the function of subnode and distributed population verification for PhiC Pharos networks. PhiC Studio Users can act as random verifiers by mounting node tokens, which enables temporary nodes to form a verification node matrix, and solve the bottleneck problem of rate, integrity and channel capacity of traditional complete nodes in the form of node tree on the chain. In the third phase of Phi C, PhiC Studio will serve as the main infrastructure of the PhiC Glaxy network and lead PhiC in the direction of BlockCube.

*"This is it"*

# 1.10  Founding team and contributors

**core team**

### Abdullah Almaatouq / PhiChain Labs CEO

MIT, Assistant Professor, Information Technology, Ph.D., Institute of Computing, computational social scientist and an Assistant Professor at the MIT Sloan School of Management,affiliated with the MIT Center for Computational Engineering, the MIT Connection Science Research Initiative, and the Center for Complex Engineering Systems at KACST.He hold a PhD in Computational Science and Engineering and dual masters from MIT.

### Enya Hu / PhiChain Labs COO

Former US Chief Operating Officer, former Energy Tower and Partner Director.Over 10 years of experience in international internet marketing and operations, specializing in international brands, internet and advertising, with super-sensitive insight and execution.

### William Lian / PhiChain Labs CTO

The Chinese University of Hong Kong undergraduate, former Hong Kong Morgan Stanley and Uber senior software architects, participated in the development of the world's first shared taxi system, designed to serve hundreds of millions of global customers a year, with a decade of Internet and Financial experience, dedicated to the globalization of technology in the blockchain.

### Ram Val / PhiChain Labs CPM

Formerly a senior product manager at Microsoft Corporation and Facebook (Facebook), he managed the Facebook Instagram architecture and supported billions of users worldwide.More than 10 years of experience in the Internet

industry, 3 years of blockchain experience, is an entrepreneur, and one of the founders of blockchain products and technological innovation.

## technical adviser

### Peter Zhang

Engaged in the IT industry in the United States for nearly two decades.He has worked in the US government department, the US top 100 company (saic), the US small and medium-sized companies for many years, and has accumulated rich work experience.He has many years of research and work experience in big data, cloud computing, software development outsourcing, and businessintelligence.

Dr.Zhang has extensive academic resources and is in constant contact with many renowned scholars, scientists and entrepreneurs.Dr.Zhang has been active in the IT world in Southern California for many years, especially in the field of big data and cloud computing.Dr.Zhang has extensive experience in project management, technical guidance, and it training.He has lectured many times for the National Economic and Information Committee, the National Development and Reform Commission and the Ministry of Education's Advanced Research Institute of the United States to introduce cloud computing, big data, Internet of Things, blockchain, and e-commerce in the United States and developed countries.

### Alex Liu

Data scientist and research method expert, is currently the chief data scientist for Big Data Analytics at IBM and the head of the Global Association for Research Methods and Data Sciences.

He graduated from Tianjin University with a computer degree.After studying abroad, he received a Ph.D.in computer science from Louisiana University.He has published more than ten papers in internationally renowned conferences and journals.His results have been used by R&D personnel in more than 10 countries and regions including the United States, Canada, the United Kingdom, Italy, Finland, and Hong Kong, and he has been recognized by the US Immigration Service as the United States.An internationally influential expert in the Internet of Things, Internet and mobile social sectors.

# Laboratory members

· Daniela  Rus
· Abdullah  Almaatouq
· Enya  Hu
· William  Lian
· Ram  Val
· Daniel  Huttenlocher
· Catherine  Johnson
· Sam  Newton
· Anu Koshy  Kampulasa
· Manfred  Bischoff
· Ripusudan  Sharman
· George  Stanny

We also extend our support to the following contributors:

· John Hughes, Co-designer of the Haskell programming language;

· Ulf Norell, Agda, co-designer of the programming language (for formal verification);

· Ulf Wiger, A Erlang expert with 30 years of development experience; one of the members of Ericsson's OG, the chief designer of AXD 301 (AXD 301 is arguably the most complex system ever built with Erlang);

· Erik Stenman, Programming started in 1980, with a PhD, served as chief technology officer of Klarna, one of Sweden's most successful fintech startups in Sweden;

· Thomas Arts, Co-founder and Chief Technology Officer of Quviq, founder of QuickCheck; PhD and professor of software engineering;

· Hans Svensson, One of the core developers of QuickCheck; PhD in Erlang program testing, model checking and verification;

· Sergei Evdokimov, PhD in Computer Science, with a background in cryptography and machine learning;

· Tobias Lidahl, Master of Engineering physical Science, academic researcher in compiler, virtual machine and static analysis;

# 2. Overview of the Golden Section Foundation

## 2.1 summary

· The ratio of the golden section is called the golden ratio (φ, with the Greek letter "phi"), which is a special number of about 1.618. It appears many times in geometry, art, architecture, and other fields.

a

b

a+b

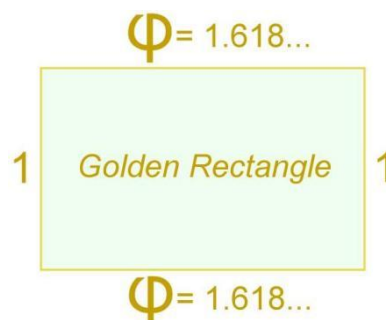$$\frac{a}{b} = \frac{a+b}{a} = 1.618... = \varphi$$

尝试一下（使用滑块）：

Divide the line into two parts to

The long part is divided

*Also*

Full-length was divided

φ= 1.618...

1  Golden Rectangle  1

φ= 1.618...

This rectangle is made using the golden ratio and looks like a typical frame of a painting, isn't it?

Some artists and architects believe that the golden section rate is the most pleasing and beautiful shape.

Do you think this is "the most pleasing rectangle"? Maybe you do it or not, it's up to you!

Many buildings and works of art have golden division rates, such as the Parthenon in Greece

(Parthenon), but it is unclear whether it is designed in this way.

## 2.2 Golden section ratio actual value

**The Gold ratio is equal to:**

**1.61803398874989484820 …(class)**

Numbers just move on without regularity. In fact, the golden ratio is known to be an unreasonable number, and I'll tell you more later.

**formula:**

We see above that the golden section ratio has the following properties:

$$\frac{a}{b} = \frac{a}{a} \quad \frac{b}{a}$$

We can split the right score in this way:

$$\frac{a}{a} = \frac{a}{a} + \frac{b}{a}\quad\frac{ba}{a}$$

$\frac{a}{b}$ Is the golden section rate of φ, $\frac{a}{a}$ Admi to 1 and $\frac{b}{a} = \frac{1}{\varphi}$,

This enables us to get:

$$\varphi \qquad \frac{}{\varphi}$$

Therefore, the golden section rate can

be defined according to its own! Let's

test it with only a few digits of precision:

$$\varphi \qquad \frac{1}{\varphi} \qquad 1$$

$$1$$
$$0.61805...$$
$$1.61805...$$

With more numbers, we will be more accurate.

## 2.3 count

You can use this formula to try to calculate the φ by yourself.

First guess its value, and then do this calculation

again and again: A) Divide 1 by your value (= 1 /

value)

B) Plus 1

C) Use that value now, and then start over from A

**Use the calculator, just constantly press "1 / x", "+", "1", "=" " can be.**

I started with 2 and got this:

| price | 1 / Value | 1 / Value + 1 |
|---|---|---|
| 2 | 1/2 = 0.5 | 0.5 + 1 = 1.5 |
| 1.5 | 1 / 1.5 = 0.666 … | 0.666 …+ 1 = 1.666 … |
| 1.666 … | 1 / 1.666 …= 0.6 | 0.6 + 1 = 1.6 |
| 1.6 | 1 / 1.6 = 0.625 | 0.625 + 1 = 1.625 |
| 1.625 | 1 / 1.625 = 0.6153 … | 0.6154 …+ 1 = 1.6153 … |
| 1.6153 … | | |

We get closer and closer to φ.

But there are better ways to get it up to thousands of decimal places very quickly.

## 2.4 The drawing of the golden division rate

This is a way of drawing the rectangle with the golden ratio:

- Draw a square of size "1"

- Place a point in the middle of one side

- Draw a line from that point to the diagonal
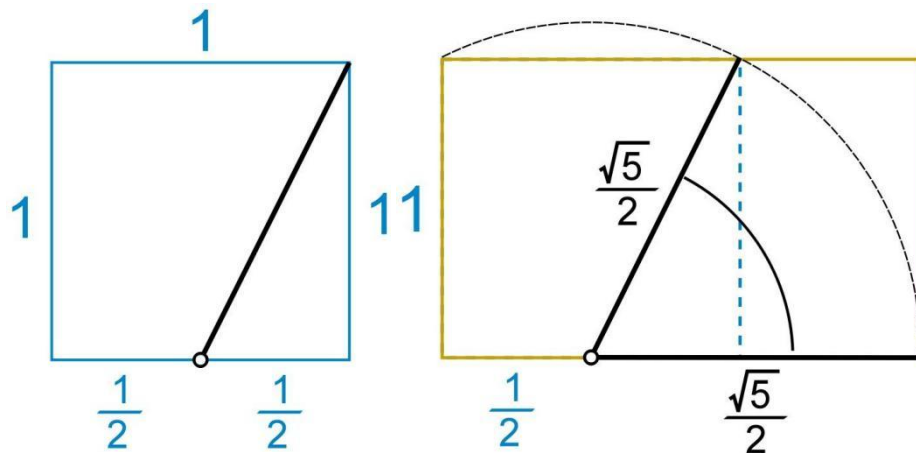


- Now turn the line, so that it is along the side of the square

- You can then expand the square to a rectangle with golden split!

$$\frac{\sqrt5}{2}$$
(Where does it come from? See Footnote ∗)

## 2.5 Quick calculation method

The rectangle above shows us a simple formula for the golden section ratio.

When the short side is $1$, $\frac{\sqrt5}{2}$, therefore:
the long side is: $\frac{1}{2}$

$$\phi_1 = \frac{\sqrt{5}}{2}$$

The square root of 5 is about 2.236068, so the gold ratio is about 0.5 + 2.236068 /

2 = 1.618034. This is a simple method for calculate when needed.

Interesting fact: The golden ratio is also equal to 2 sin (54°),

which you can verify by computer!

## 2.6 Fibonacci series

There is a special relationship between the gold ratio and the Fibonacci sequence:

0、1、1、2、3、5、8、13、21、34, ...

(The next number is derived by adding up the first two

numbers.) Surprisingly: when we use any two consecutive

Fibonacci numbers (one

Next up), their ratio is very close to the golden ratio.

In fact, the larger the Fibonacci series, the closer the approximation is. Let's try it out:

| A | B | B / A |
| --- | --- | --- |
| 2 | 3 | 1.5 |
| 3 | 5 | 1.666666666 ... |

5          8                    1.6

| | | |
|---|---|---|
| 8 | 13 | 1.625 |
| ... | ... | ... |
| 144 | 233 | 1.618055556 ... |
| 233 | 377 | 1.618025751 ... |
| ... | ... | ... |

We don't have to start with 2 and 3, here I randomly choose 192 and 16 (and get sequences 192,16,208,224,656,1088,1744,2832,4576,7408,11984,19392,31376,...) :

| A | B | B / A |
|---|---|---|
| 192 | 16 | 0.08333333 ... |
| 16 | 208 | 13 |
| 208 | 224 | 1.07692308 ... |
| 224 | 432 | 1.92857143 ... |
| ... | ... | ... |
| 7408 | 11984 | 1.61771058 ... |
| 11984 | 19392 | 1.61815754 ... |
| ... | ... | ... |

## 2.7 The most unreasonable number

I believe that the golden section rate is the most unreasonable number.

The reasons are as follows:

As we saw before, the golden ratio can be defined by itself, as follows:

$$\varphi = 1 + 1/\varphi$$
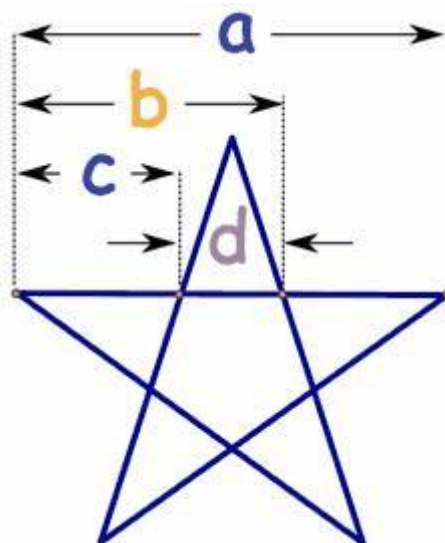
(Quantity: 1.61803...= 1 + 1 / 1.61803)  ...

This can be extended to an present score (called "continuous score"):

$$\varphi = 1 + \cfrac{1}{1 + \cfrac{1}{1 + \cfrac{1}{1 + \cdots}}}$$

Thus, it slips neatly between the simple scores.

Note: Many other irrational numbers are close to rational numbers (e. g. Pi = 3.141592654 is very close to 22 / 7 = 3.1428571) ...  ...

## 2.8 five-pointed star

No, not witchcraft! The five-pointed star is known as a magical or sacred symbol. There is a special number inside the pentagram, called the golden ratio:

When I drew this figure, I measured four lengths and concluded that a = 216, b = 133, c = 82, and d = 51. So, let's examine what the ratio is:

- 216/133 = 1.624...

- 133/82 = 1.622...

- 82/51 = 1.608...

If I draw and measure more accurately, then I will be closer!
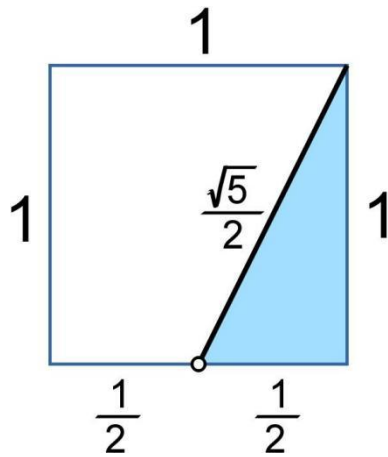
- a / b = 1.618...

- b / c = 1.618...

- c / d = 1.618...

This is all about the regular pentagram (all edges and angles are equal), but there are also the irregular pentagram.



regular    irregular

# 2.9 footnote

With the help of Pythagoras:

$$c^2 = a^2 +$$

$$c^2 = \left(\frac{1}{2}\right)^2 + 1^2$$

$$c^2 = \frac{1}{4} + 1$$

$$c^2 = \frac{5}{4}$$

$$c = \sqrt{\frac{5}{4}}$$

$$c = \frac{5}{2}\sqrt{}$$



## Solving by using the quadratic equation

We can find the value of φ as follows:

$$\phi \qquad \overline{\phi}$$

$$\phi^2 = \phi + 1$$

$$\phi^2 - \phi \quad 1$$

This is a quadratic equation, and we can use the quadratic equation:

$$\phi \quad \frac{-b \quad \sqrt{b^2}}{4ac}$$

Using a = 1, b = 1 and c = 1 we get:

$$\phi \quad \dfrac{1\sqrt{\phantom{x}}}{1}$$

It can be simplified to:

$$\phi_{1} \quad - \quad \dfrac{\sqrt{5}}{2}$$
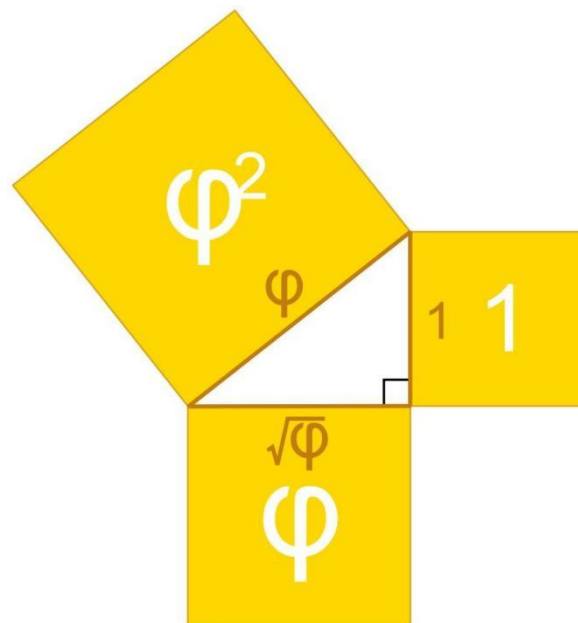
## 2.10 Kepler Triangle

We see it above: $= \phi^2 + 1$

Pythagoras says that the right triangles are: $c^2 = \alpha^2 + \beta^2$

This inspired someone named Johannes Kepler to create this triangle:

It's really cool, because:

- He had both Pythagoras and φ

- The ratio of edges is 1: φ: φ to form a geometric sequence.

# 三、 PhiC client

## 3.1 Client overview

　　PhiC's ledger segmentation and signature confusion verification. PhiC App Is a blockchain 3.0 application issued based on the Golden Section Chain (Phi Chain) that can be mined on mobile terminals. According to the division of global common languages, we initially preset 8 language packages in the PhiC client to facilitate the access of miners in different regions. You can register for Phi Chain App through your mobile phone and request authentication (including but not limited to passport, driver's license, and other identification).



　　Phi Chain Provide each real-name user with a Origin origin mining machine as a reward. Just as the golden division number φ is endless, the running time of the origin mining machine is also infinite. This means that you can always find your wealth through the Origin origin mining machine.

# 3.2 PhiC, mining instructions

*"Our knowledge of the Golden section is just the tip of the iceberg."*

In order to commemorate the historical figures who have made outstanding contributions to the golden division, the name of the mining machine of the golden division chain (Phi C) will be given the historical meaning. We believe that people will remember the efforts of these pioneers on the road of exploration, and the great achievements they have made.

Start the running time. At least every 24 hours, you need to return to the App mining interface for running check. Each run check will stop the time of the reset mining machine you dig to 24 hours. Remember to come back and reset your mining machine to avoid time depletion.

| Mine machine name | code name | Exchange required | Output due | performance period | Calculate force |
|---|---|---|---|---|---|
| origin | M.0 | 0 | 3 | On the 30th | 0G Φ/s |
| Pythagoras | M.1 | 10 | 12 | On the 30th | 1G Φ/s |
| Mona Lisa | M.2 | 100 | 150 | On the 45th | 10 Φ/s |
| Euclid | M.3 | 500 | 800 | On the 60th | 50 Φ/s |
| Kepler | M.4 | 1000 | 1800 | On the 80th | 100 Φ/s |

| pyramid | M .5 | 2000 | 3800 | On the 100th | 200 Φ/s |
|---------|------|------|------|--------------|---------|

# Pythagoras

Yield: 12 φ

Computing power: + 1G φ / s

In Memory of the Pythagoras Discovery φ

**Pythagorean golden section: a:b=(a+b):a**

**————Pythagoras**



# Mona Lisa

Yield: 150 φ

Computing power: + 10G φ / s

The Mona Lisa, Da Vinci's Golden Section

**Whether it is a powerful power or a small dominating force, only the power of control is eternal.**

**————Leonardo da Vinci**



# Euclid

Yield: 800 φ

Computing power: + 50G φ / s

"The earliest Discourse on the Golden Section."

**There was no royal road to geometry.**

**————Euclid**

# Kepler

Yield: 1,800 φ

Computing power: + 100G φ / s

The Pythagorean Theorem & The Golden Section"

**There are two treasures in geometry, one is Pythagorean theorem, the other is golden Section .**



# pyramid

Yield: 3,800 φ

Computing power: + 200G φ / s

The Secret of the Pharaoh Pyramid."

**All the beautiful animals and plants in nature are close to 0.618 in physical structure**

**————Pyramid**

All used mining machines will be sent as an NFT to their owner account as a reward for participating and witnessing the PhiC _ Origin origin net miner. You can add your NFT to others. They can also be traded in Opensea and PhiCStore. As a witness of the network of origin, it is worth our collection and memorial.

Among them, the application scenario of PhiPay scanning code payment is for the purpose of merchants' collection and donation, and the entrusted transaction is used for floor price limit transaction, while C2C is more suitable for the traditional contract transaction between users and users. When the main network computing power reaches the throughput efficiency of supporting trading applications, we will permanently open the trading system, which is open and is not closed, so let's look forward to this day. It's very possible that when you see this sentence, you've already experienced the convenience of PhiC payments.

PhiC's transaction fee is currently 4.

## 3.3 Cooperative advice

The golden split chain (Phi Chain) is committed to building the golden split chain public chain and expanding more applications to PhiChain. If you have the intention to explore together or make valuable suggestions to us, please contact Email: labs @ phic.app

## 3.4 Team background