GOLD CHAIN

WHITE PAPER

Open a new era of blockchain technology innovation and gold digital transformation!

Project Origin

Analysis of the current status of gold investment

1. Gold as a safe-haven asset
Gold is widely regarded as a safe-haven asset, especially when the global economy is turbulent, financial markets are unstable or inflationary pressures rise, investors tend to buy gold to protect their assets. For example, in the case of stock market fluctuations or currency depreciation, gold usually shows a good value preservation effect.

2. Diversification of gold investment forms
The forms of gold investment are constantly diversifying, including the following common ways:
Physical gold: traditional forms of gold investment, such as buying physical gold such as gold coins and gold bars, which investors can actually hold.
Gold ETF: indirect investment through gold exchange-traded funds (ETFs), investors do not need to actually hold physical gold, and can participate in gold price fluctuations through the securities market.
Gold futures: through futures contracts, gold trading, investors can obtain gains from the rise and fall of gold prices through leveraged trading.
Gold stocks: investing in stocks of gold mining companies, this type of investment is indirectly linked to the price of gold, and investors can gain gains through the rise and fall of these stocks.
Gold derivatives and financial products: such as gold options, gold-linked funds, etc., provide more financial tools for investors to choose from.

3. Market demand and supply
Demand: The demand for gold mainly comes from three aspects:
Jewelry industry: This is the largest source of gold demand, especially in emerging markets such as China and India, where the demand for gold jewelry is strong.
Investment demand: As economic uncertainty increases, investors' investment demand for gold increases. The continuous development of investment tools such as gold ETFs and gold futures makes gold investment more convenient.
Central bank reserves: Central banks in many countries regard gold as part of their foreign exchange reserves. The growing level of gold reserves of central banks around the world shows the importance of gold in the global financial system.
Supply: Global gold production is relatively stable, but factors such as rising mining costs and environmental regulations have made gold mining more difficult, which has affected gold supply. On the other hand, gold recycling is also an important source of supply.

4. Gold market volatility and price influencing factors
Gold prices are affected by multiple factors:
Global economic situation: Geopolitical risks such as economic recession, financial crisis, and war usually push up gold prices.
Monetary policy: Low interest rates and loose monetary policies usually drive up gold prices because low interest rates reduce the opportunity cost of holding gold.
Inflation: When inflation rises, gold is often seen as a tool to fight inflation.
Dollar trend: Gold and the US dollar have an inverse relationship. When the US dollar depreciates, gold usually rises.

5. Digital gold and blockchain technology
With the development of science and technology, digital gold and gold investment methods based on blockchain technology are gradually emerging. Through blockchain technology, investors can trade, hold and transfer gold more conveniently, while reducing transaction costs and improving transparency. Some platforms have also launched gold tokenization products, combining gold assets with digital currencies, which has improved the liquidity and convenience of gold investment.

6. Market challenges and prospects
Market volatility: The price fluctuations in the gold market are large, and investors face certain risks.
Regulatory issues: The supervision of the gold market is relatively loose, and there are potential problems such as price manipulation and market manipulation.
Innovative development: The rise of blockchain technology and digital assets has brought new opportunities and challenges to gold investment, but at the same time, it is also necessary to solve problems such as technology, regulations and market acceptance.

Overall, the gold investment market is still large and attractive, especially when global economic uncertainty increases, gold is still an important choice for many investors to preserve value and hedge risks. With the development of digital technology, gold investment will become more flexible, diverse and convenient.

Disadvantages of gold investment

1. Lack of income source
Gold itself does not generate any cash flow, and investing in gold cannot bring regular dividends or interest income like stocks or bonds. For investors seeking fixed income, gold does not have a direct financial return. Therefore, investment in gold relies more on its price increase to achieve capital appreciation.

2. High price volatility
Although gold is generally regarded as a safe-haven asset, its price still fluctuates greatly. Affected by various factors such as the global economy, politics, monetary policy, and market sentiment, the price of gold can fluctuate violently in the short term. In certain periods, gold may experience a long period of price adjustment or correction, causing uncertainty for investors.

3. Storage and insurance costs
If investors choose to buy physical gold (such as gold bars, gold coins, etc.), they will need to face additional costs for storage and insurance. Gold needs to be properly kept, otherwise it may face the risk of theft or damage. Therefore, investing in physical gold will bring additional storage costs and insurance costs, which to some extent reduces the return on investment.

4. Liquidity issues
Although gold is a globally recognized asset, physical gold has poor liquidity compared to stocks, bonds or digital currencies. Investors may encounter difficulties in the event of a quick cash out, especially when the gold is stored far away or cannot be traded directly through the market. In addition, you may need to pay related transaction fees, commissions, etc. when selling gold.

5. Highly affected by market sentiment
The price of gold is greatly affected by market sentiment and macroeconomic factors. For example, during periods of economic uncertainty, investors may flock to gold as a safe-haven asset, pushing up its price; but in the case of economic recovery or rising risk appetite, the demand for gold may decrease, causing the price to fall back. Therefore, gold's price fluctuations tend to be sensitive and easily affected by market sentiment.

6. No interest or dividends
Unlike financial assets such as stocks and bonds, gold itself does not generate any interest, dividends or dividends. This means that gold investors can only rely on its price increase to achieve returns. In contrast, stocks and bonds can bring investors regular cash flow, increasing the attractiveness of their investment.

7. Market manipulation and price opacity
There is a certain degree of manipulation risk in the gold market. For example, large financial institutions and national central banks may affect market prices through gold buying and selling operations, resulting in price fluctuations that do not fully reflect the true supply and demand relationship in the market. In addition, some gold trading markets have low information transparency and may have price manipulation or unfair trading.

8. Failure to provide shareholder equity
Investing in gold is not equal to investing in a company or industry. Compared with stock investment, gold investment cannot enjoy shareholder rights, such as participating in corporate governance and obtaining voting rights at shareholders' meetings. Investors cannot enjoy the potential benefits or asset appreciation brought by company growth, and can only rely on the fluctuation of gold prices to make profits.

9. Affected by currency fluctuations
Although gold is regarded as a safe-haven asset, its price is still affected by currency exchange rate fluctuations. In particular, the price of gold is closely related to the US dollar. When the US dollar strengthens, the price of gold usually falls. This means that gold investors may face additional risks due to exchange rate fluctuations.

10. Environmental protection and social responsibility issues
Gold mining may have negative effects on the environment and society. Gold mining often involves a lot of energy consumption and resource waste in the mining process, and may cause serious damage to the ecological environment. Socially responsible investors may have concerns about the environmental and ethical issues of gold, especially when the source of gold is not transparent.

Future development trend of blockchain

Blockchain will become the cornerstone of industrial interconnection
Blockchain is not a new technology, but a combination of a series of technologies. Cloud computing, distributed database storage, asymmetric encryption technology... these technologies are combined to form blockchain, and GoldChain's original AI supercomputing system is integrated with blockchain to achieve AI intelligent control.

GoldChainA uses the distributed ledger and network consensus of blockchain to enable all users on the GoldChain network node to conduct data transactions under the protection of encryption technology, and this data is tamper-proof and traceable. Without digital means, the GoldChain data system will not be able to reach every customer. Digitalization has become an indispensable business means of Web 3.0, and digital technology will be the intelligent technology that all companies will develop and utilize in the future.

GoldChain hopes to use digital technology to improve the stability, agility and efficiency of cross-chain data transmission of the platform. Driven by GoldChain, it is believed that the application of blockchain in the industry will also be rapidly popularized in the future.

Three major trends in the application of blockchain industry
Trend 1: Focus on practical value: Technology is to serve business goals, especially cross-enterprise applications such as blockchain. If it cannot bring real results, it is unsustainable. Now that the global economy is sluggish and people are willing to store more, the arrival of GoldChain will bring significant financial management effects to all users and help users survive the bearish period.
Trend 2: Integration of various technologies: The commercial value provided by blockchain itself is limited, and GoldChain integrates blockchain technology with AI supercomputing power, big data, Chat GPT, Internet of Things and other technologies to create a safe, transparent and fair intelligent trading platform
Trend 3: Blockchain industry applications will reshape the digital ecosystem: In the process of digital transformation, blockchain technology will become the core capability for building a cross-enterprise digital ecosystem system. The application of blockchain in GoldChain is the same. It will also promote the digital ecology of GoldChain. I believe that the digital ecology of GoldChain will be even more powerful.

Project Introduction

Project Overview

GoldChain is a new generation of AI-enabled gold blockchain public chain project led by Newmont Corporation, a world-class gold mining company, and Pantera Capital, a well-known blockchain investment institution, and co-invested by CoinShares and Fabric Ventures. GoldChain aims to break through the traditional gold investment model and use AI supercomputing power and RWA (smart asset rights proof) technology to build an efficient, secure and transparent gold digital financial ecosystem.

GoldChain relies on the decentralized nature of blockchain and combines the intelligent processing capabilities of artificial intelligence to achieve the credible digitization, transparent circulation and intelligent value of gold assets. Through the blockchain's tamper-proof data storage technology, GoldChain ensures the authenticity and traceability of gold assets; with the help of AI computing power, it optimizes investment strategies and makes market decisions more intelligent and efficient; through the RWA mechanism, physical gold is seamlessly mapped to the chain, allowing gold assets to circulate freely around the world.

GoldChain's innovative system breaks the geographical restrictions and liquidity barriers of the gold market, allowing global investors to no longer be restricted by the complex processes of traditional financial institutions and to participate in the gold market conveniently, safely and efficiently anytime and anywhere. GoldChain is not only a technological revolution, but also a bridge for gold investment to move towards a new era of digital finance!

Project Vision

GoldChain is committed to building a decentralized, trustworthy, and intelligent gold investment ecosystem, realizing the digital empowerment of gold assets, making gold investment more fair and efficient, and promoting the global development of the gold market.

Newmont Corporation

Founded in 1921 and headquartered in Colorado, USA, it is one of the world's largest gold producers with operations in many countries.

As one of the world's leading gold producers, Newmont operates in many countries around the world, including the United States, Canada, Mexico, Peru, Suriname, Argentina, Ghana and Australia. In addition to gold, Newmont is also engaged in the production of metals such as copper, silver, lead and zinc. In 2019, Newmont acquired Canada's Goldcorp for US$10 billion, becoming the world's largest gold producer. In addition, the company plans to invest US$500 million in renewable energy projects by 2025 to achieve its goal of reducing carbon emissions by 30% by 2030.

Newmont operates multiple mines around the world, including Carlin, Phoenix, Twin Creeks and Long Canyon mines in Nevada, USA, Musselwhite, Porcupine and Éléonore mines in Canada, and Peñasquito mine in Mexico. As of 2020, Newmont's gold reserves are approximately 94.2 million ounces.

As the lead investor in GoldChain, Newmont has provided strong financial support to GoldChain, enabling it to develop rapidly and healthily.

Pantera Capital

Pantera Capital is an American hedge fund and venture capital firm focused on digital assets, headquartered in Menlo Park, California. The company was founded in 2003 by Dan Morehead, former head of macro trading and CFO of Tiger Management. Initially, Pantera Capital focused on global macro strategies and invested more than $1 billion in institutional funds. In 2013, the company turned to the digital asset field and created the first blockchain hedge fund and venture capital fund in the United States, focusing on investments in cryptocurrencies and blockchain technology. As of 2025, Pantera Capital will manage approximately $5 billion in assets, making it one of the largest digital asset funds in the world.

Pantera Capital invested in star projects such as Bitcoin, Ethereum, and Solana in the early days, and deeply laid out the public chain, DeFi and digital assetization tracks. It has participated in the physical gold tokenization project of Sprott, a gold ETF provider. It has rich experience in precious metals + blockchain, and provides strong technical support, talent support and market support for GoldChain, ensuring that GoldChain can grow and mature rapidly.

GoldChain Compliance

GoldChain has obtained the US MSB (Money Services Business) license, which brings several important advantages to the project, as described below:

1. Legal and compliant identity authentication
The MSB license is issued by the US financial regulator Financial Crimes Enforcement Network (FinCEN) and is applicable to businesses that provide monetary services, including digital currency exchanges, payment service providers and wallet providers. GoldChain's acquisition of the MSB license indicates that it complies with US financial regulations and has a legal operating identity. This is crucial to enhance user trust and attract institutional investors.

2. Enhance market trust and transparency
Companies that obtain MSB licenses need to comply with strict compliance requirements such as anti-money laundering (AML) and customer identity verification (KYC). GoldChain's acquisition of this license proves that it has sufficient compliance guarantees in the management of user funds, transparency of transaction records, and prevention of illegal activities. This will enhance the market's trust in the GoldChain platform, especially in areas with strict financial supervision, and enhance the sense of security of users and investors.

3. Expanding the US market
The United States is one of the important markets in the global blockchain and digital asset industry, with a wide range of digital asset needs and a large investor base. After obtaining the MSB license, GoldChain can legally provide crypto-asset related services in the US market, including digitization of gold assets, payment, cross-border transfer, etc. For GoldChain, this means being able to directly enter the US market and expand a broader user base and business opportunities.

4. Enhance cooperation opportunities with traditional financial institutions
The MSB license enables GoldChain to establish partnerships with traditional financial institutions (such as banks, payment platforms, etc.), as these institutions usually require their partners to comply with local regulatory requirements. After obtaining the MSB license, GoldChain can more smoothly cooperate with traditional financial institutions such as banks and payment companies in the United States to promote the widespread application of its blockchain and gold digitization services, especially in payment, financial products and compliance.

5. Strengthen cross-border payments and international compliance
The MSB license not only helps GoldChain enter the US market, but also provides legitimacy for its expansion of cross-border payments. In a globalized financial environment, GoldChain can use this license to connect with the regulatory systems of other countries and regions to promote the circulation and application of its blockchain technology and gold digital assets around the world, especially in cross-border payments and asset transfers.

6. Provide innovative financial services
With the rise of crypto assets and digital assets, the MSB license provides GoldChain with a strong legal framework to promote the company's development in financial technology innovation. For example, GoldChain can launch gold payment solutions, gold derivatives trading platforms, and decentralized finance (DeFi) services based on blockchain technology to provide users with more innovative financial products and services.

GoldChain Core Technology

AI computing power optimizes transactions and asset management
Analyze gold market dynamics through AI algorithms, optimize trading strategies, improve asset allocation efficiency, use AI to conduct on-chain gold asset risk assessment, and ensure the safety of investors' assets.

RWA
Record the ownership, storage status and other information of gold assets through NFT and smart contracts to ensure the transparency and authenticity of gold assets. RWA allows gold assets to be fragmented and liquidity to be improved, lowering the investment threshold and increasing market circulation.

Cross-chain interoperability
GoldChain uses cross-chain bridges to connect different public chains to achieve the free circulation of gold assets in DeFi, RWA and other ecosystems. Provide smart contract APIs to support various Web3 applications to access the GoldChain ecosystem and realize the widespread application of gold assets.

High-performance PoA+AI consensus mechanism
Combining PoA (authoritative proof) + AI computing power to optimize consensus, improve the efficiency of on-chain transaction processing, and ensure security at the same time.
AI computing power dynamically adjusts computing power allocation to improve network operation stability and reduce energy consumption.

GoldChain Singapore Headquarters

GoldChain is headquartered in the heart of Singapore's Central Business District (CBD), which is the center of GoldChain's global operations and strategic development. As an innovative enterprise integrating blockchain technology, artificial intelligence (AI), and gold financialization, GoldChain coordinates global business at its headquarters in Singapore to promote the digitalization and globalization of gold assets.

As a leading global financial technology center, Singapore has a mature financial system, open blockchain regulatory policies, and a strong international financial network, providing unique conditions for the development of GoldChain.

1. Financial center status: Singapore is one of the world's important gold trading centers, and it is also a gathering place for financial technology companies in Southeast Asia and even the world

2. Blockchain-friendly supervision: The Monetary Authority of Singapore (MAS) is open to blockchain, cryptocurrency and real-world assets (RWA), and provides support for GoldChain's legal and compliant operations

3. Geographical advantage: Singapore is located in the core of Asia, connecting major gold markets such as China, India, and the Middle East, providing convenience for GoldChain to expand its global market

4. Strong technology and environment: The Singapore government supports the development of cutting-edge technologies such as artificial intelligence and blockchain, which is conducive to GoldChain's technology research and development and ecological construction

GoldChain Singapore Headquarters Core Functions

Global Operations and Strategic Management Center
1. Coordinate GoldChain's global business, including the expansion and management of North America, Europe, the Middle East, Asia and Latin America
2. Responsible for strategic cooperation, and establish partnerships with global financial institutions, gold mining companies, blockchain projects, etc.
3. Promote the construction of a compliance system to ensure that GoldChain complies with the financial regulatory requirements of various countries worldwide

Technology R&D and AI Laboratory
1. GoldChain has established an AI & Blockchain Technology Laboratory at its headquarters in Singapore, focusing on AI algorithm optimization (intelligent trading, market analysis, risk management); RWA technology research and development; high-efficiency PoA + AI computing power optimization consensus mechanism
2. Cooperate with local universities and scientific research institutions in Singapore to promote the innovation of blockchain + AI technology

Global DeFi and RWA Ecological Development Center
1. Responsible for the construction of GoldChain DeFi ecology, including gold pledge lending, gold NFT asset trading, etc.
2. As one of the management agencies of GoldChain DAO (decentralized governance), promote the development of the GOLD token governance system

Physical gold exchange and financial cooperation
1. Responsible for managing GoldChain Southeast Asia offline gold shop network, supporting GOLD tokens to exchange for physical gold
2. Connecting Singapore local and global gold markets, optimizing GoldChain gold liquidity management
3. Cooperating with local financial institutions, banks, and exchanges in Singapore to promote the exchange service of GOLD with legal currency and cryptocurrency

Advantages of GoldChain obtaining ACRA license

1. Legal and compliant operation
GoldChain has obtained an ACRA license to ensure that its business in Singapore complies with international regulatory standards and enhances investor trust.

2. International financial recognition
Singapore is a global financial and blockchain innovation center. GoldChain is legally registered here, which means that it can enjoy the recognition of international banks, financial institutions, and investors.

3. Global market expansion
The ACRA license lays the foundation for its compliance expansion in the Asian, European and North American markets, which will help attract funds, DeFi cooperation and RWA financialization business development.

4. Promote the development of DeFi + RWA ecosystem
GOLD tokens and gold investment, asset digitization, DeFi pledge lending and other services can be provided in Singapore in compliance with regulations to enhance ecological sustainability.

GoldChain Global Offline Gold Store Distribution

GoldChain relies on the resource advantages of Newmont Gold Mining Company in the United States and the support of top investment institutions such as Pantera, CoinShares, and Fabric Ventures to actively expand offline gold exchange stores around the world and create an online + offline gold financial ecosystem.

At present, GoldChain offline stores have covered many major financial centers, active gold trading areas and emerging markets, ensuring that users can safely and conveniently exchange GOLD tokens for physical gold and enjoy the value-added services of the GoldChain ecosystem.

GoldChain Business Model

1. GoldChain gold asset chain
Under the leadership of Newmont Gold Mining Company, we cooperate with the gold supply chain and gold mining companies to realize the digital transformation of gold, empower RWA (real asset tokenization), and provide gold tokenized assets. Experience the digital innovation of gold in the GoldChain ecosystem.

2. GoldChain Web3 payment and consumption
Promote Gold to support stablecoin payment and gold asset payment, and enhance the daily consumption attributes of gold. Combined with Web3 scenarios such as SociaiFi and GameFi, expand more ecological applications of GoldChain.

3. GoldChain financial derivatives
Combined with the DeFi ecosystem, we launched financial products such as gold asset lending, stablecoins, synthetic capital, options, etc., and controlled risks through AI supercomputing systems to optimize the GoldChain derivatives market.

Gold Ecosystem Application

1. DeFi lending and staking
GOLD staking income: Users can stake GOLD tokens in the GoldChain ecosystem to obtain stable income or additional GOLD token rewards.
Gold lending: Users can use GOLD as collateral to borrow stablecoins such as USDT, release the liquidity of GOLD, and achieve efficient use of gold assets.

2. RWA-based gold
RWA-based gold can be traded 24/7 without being restricted by the trading hours of traditional markets.
Support small investments: Users can purchase 1g, 0.1g, or even smaller units of gold, lowering the investment threshold and enabling more investors to participate in the gold market.

3. Transaction medium (payment & settlement)
GOLD tokens can be used in various payment scenarios within the GoldChain ecosystem, such as online purchase of gold and related jewelry, offline gold shop payment settlement, various transaction fees, etc.
In the future, GOLD will be integrated with payment networks (Visa, Mastercard, cryptocurrency payment gateways) to achieve global gold payment settlement.

4. DAO governance (decentralized autonomy)
GOLD token holders can participate in GoldChain DAO governance, vote to decide the direction of ecological development, economic model adjustments, transaction fees and platform rules changes, etc.

5. Gold insurance and financial derivatives
Gold insurance: GOLD tokens can be used to purchase on-chain gold insurance products to hedge gold market risks.
Gold ETF & Futures: GoldChain plans to launch gold ETFs, gold futures and other derivatives based on GOLD tokens to expand gold investment scenarios.

6. GOLD tokens support multi-chain deployment and can be circulated on blockchain networks such as Ethereum, BNB Chain, Polkadot, and Solana.
Through the Cross-Chain Bridge, GOLD tokens can be seamlessly transferred across chains, improving liquidity and global accessibility

Public chain pain points and GoldChain solutions

1. Performance and scalability issues
Traditional public chains (such as Bitcoin, Ethereum, etc.) have performance bottlenecks due to the use of proof of work (PoW) or other consensus mechanisms, and their transaction throughput and confirmation time are low, making it difficult to meet the needs of large-scale applications.
GoldChain Solution:
High-performance consensus mechanism: GoldChain combines PoA (proof of authority) + AI computing power optimization consensus mechanism to improve transaction processing speed and block confirmation time, reduce network latency, and ensure stability and scalability under high concurrency.
AI computing power optimization: Use artificial intelligence algorithms to dynamically adjust network load distribution, optimize computing power distribution, improve the efficiency of on-chain transactions, and reduce energy consumption.

2. Cross-chain interoperability issues
Traditional public chains are usually closed and difficult to interoperate with other blockchain systems. This restricts the flow of assets and data, especially in the interconnection between different blockchain ecosystems.
GoldChain Solution:
Cross-chain bridge: GoldChain breaks down the barriers between different blockchains through cross-chain technology and realizes asset flow and data exchange between multiple chains.
Decentralized cross-chain protocol: GoldChain's cross-chain protocol supports interoperability with other mainstream public chains such as Ethereum, Solana, BSC, etc., enhancing the compatibility and liquidity of the ecosystem.

3. Energy consumption and environmental impact
Many traditional public chains (especially Bitcoin) use a high-energy proof-of-work (PoW) mechanism, which has a negative impact on the environment and is difficult to sustain in the long run.
GoldChain Solution:
PoA+AI computing power optimization consensus mechanism: GoldChain uses a more efficient PoA (proof of authority) + AI computing power optimization consensus mechanism, which reduces the demand for computing resources compared to PoW, thereby greatly reducing energy consumption, and further reduces environmental impact through dynamic adjustment of computing power allocation by AI.
Green mining support: GoldChain encourages miners and verification nodes to use renewable energy, thereby promoting the development of environmentally friendly blockchain networks.

4. Data privacy and security issues
Although the data in traditional public chains is transparent and verifiable, there is also a risk of data privacy leakage, especially in financial and personal data management.
GoldChain Solution:
Privacy protection technology: GoldChain combines advanced encryption algorithms and privacy protection technologies such as zero-knowledge proof (ZKP) to ensure the security and privacy of data, allowing users to trade without exposing sensitive information.
AI risk assessment system: AI computing power monitors on-chain activities in real time, analyzes potential security threats, and promptly detects and prevents attacks.

5. Digitalization and liquidity issues of real-world assets such as gold
Although blockchain has made great progress in digital currency, real-world assets (RWA) such as gold have not yet been widely digitized, and have low liquidity and high investment thresholds.
GoldChain solution:
Digitalization and tokenization of gold assets: GoldChain uses RWA (smart asset rights proof) technology to digitally map real-world assets such as gold, allowing gold assets to be traded, pledged and circulated on the blockchain.
Gold asset fragmentation and liquidity: Through the fragmentation of gold assets, GoldChain lowers the threshold for gold investment, and any user can participate in the gold market, which improves the liquidity of gold.

6. Compliance issues of smart contracts and decentralized finance (DeFi) ecology
The smart contracts and DeFi ecology of traditional public chains have insufficient compliance and legal risks, especially in cross-border transactions and large-scale applications, and lack an effective compliance framework.
GoldChain Solution:
Combining smart contracts with legal compliance: GoldChain combines smart contracts and legal compliance frameworks to ensure that its smart contracts comply with the laws and regulations of various countries around the world, especially in highly regulated industries such as gold and finance.
Decentralized Finance (DeFi) Compliance Solution: GoldChain cooperates with the traditional financial system to launch compliant gold derivatives, lending and payment solutions to help integrate traditional finance with decentralized finance.

Economic Model

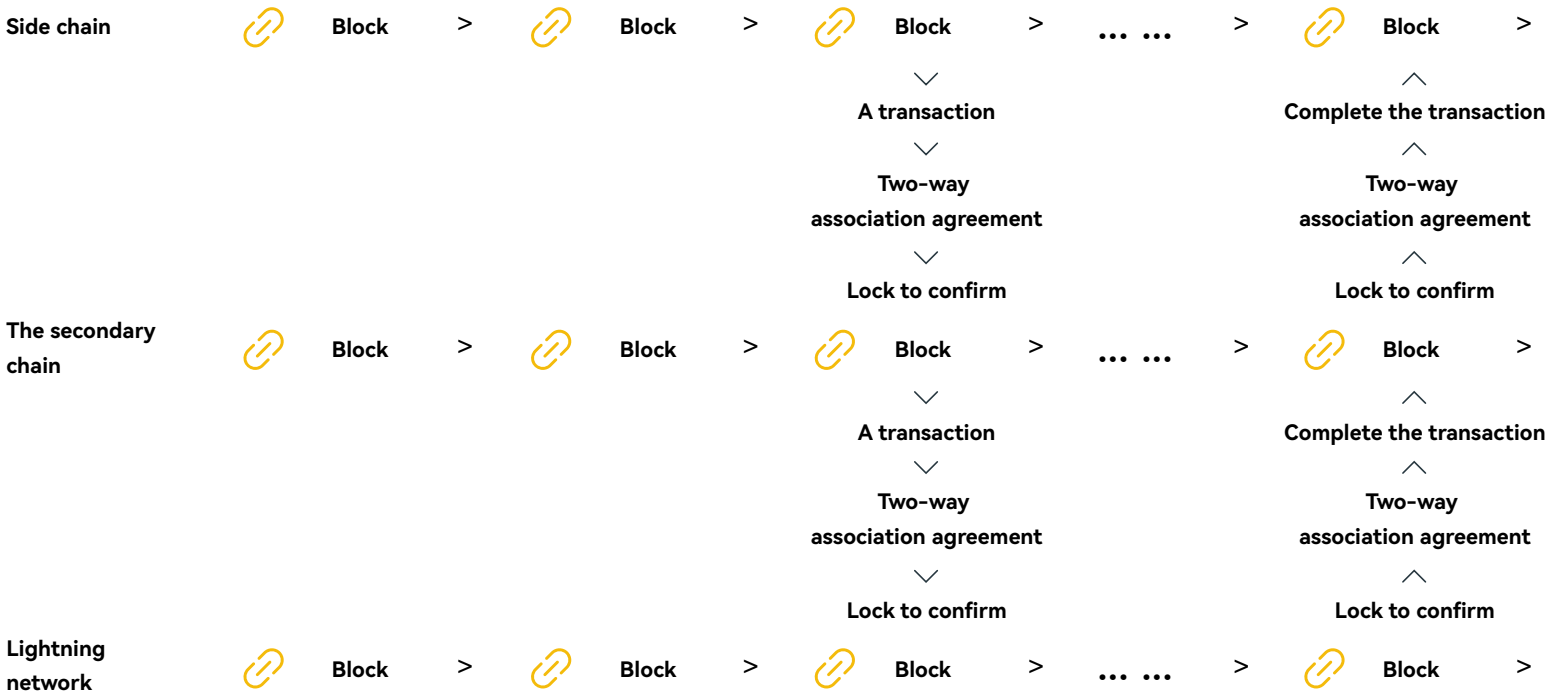
Project name: Gold Chain
Token name: Gold
Total issuance: 100 million
Total raised: 5%, 5 million
Weighted mining pool: 95%, 95 million Mining promotion output

Technical Analysis

Extensible API

GoldChain uses the most popular and flexible REST API today. The client sends a request to the server in the form of data. The server uses the client input to start executing internal functions and returns the output data to the client.

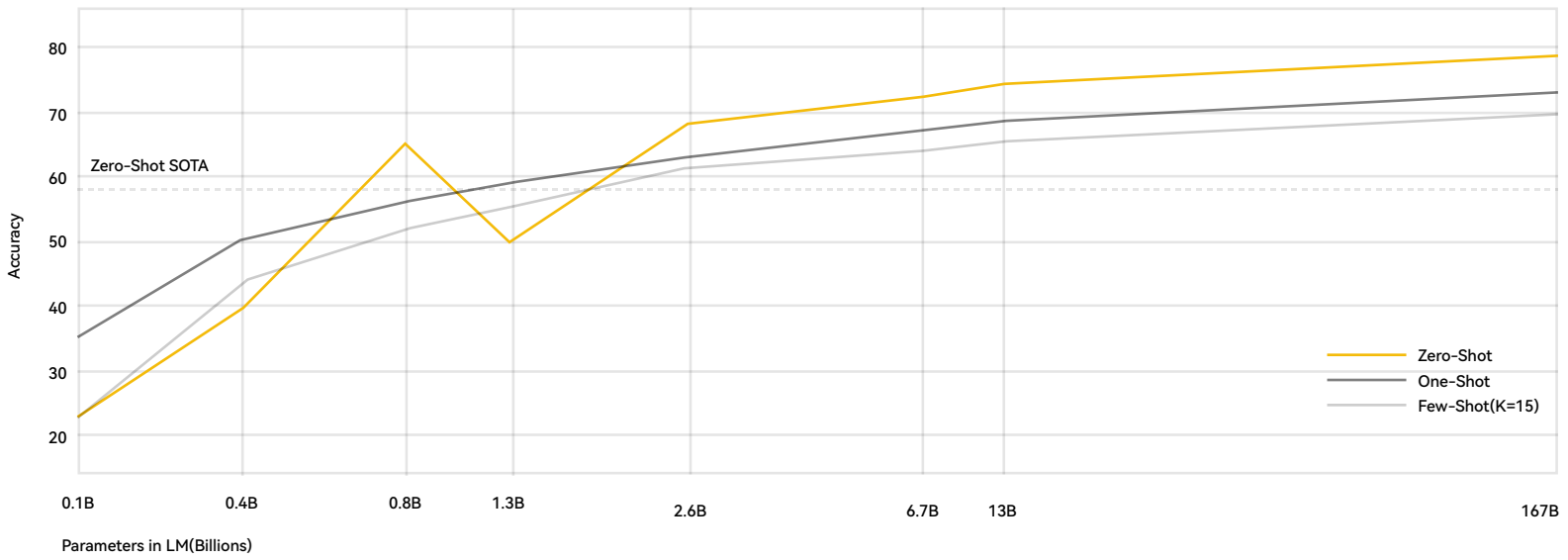
REST API has high scalability and ease of use. It keeps the underlying blockchain protocol unchanged, puts transactions off-chain for execution, and solves the scalability problem by changing the protocol usage method. At the same time, the multi-chain structure is used to divide the original chain into multiple chains. Each chain is responsible for part of the computing and storage business. The number of chains can increase with the increase of business data, and the overall performance of the system can also increase with the increase of the number of chains.



Chat GPT Technical Model

Pre-training super large language models
Starting from GPT/Bert, pre-training language models basically follow such a two-stage paradigm, that is, pre-training large models through self-supervision. Then on this basis, fine-tuning is performed on specific downstream tasks. Among them, GPT uses a unidirectional Transformer decoder, so it tends to be natural language generation, while Bert uses a bidirectional Transformer encoder, so it tends to be natural language understanding. Because of Bert's timely open source and Google's strong influence in the industry, plus the rapid landing capabilities that business-oriented AI application companies hope for, at that time, most practitioners were more optimistic about Bert. Even the GPT2 released by openai received a mediocre response, which also laid the groundwork for its subsequent lag.

This two-stage language model has a single capability, that is, the translation model can only translate, the fill-in-the-blank model can only fill in the blanks, the summary model can only summarize, etc. To use it in actual tasks, each needs to be fine-tuned on its own data, which is obviously not smart. In order to further align with the general language model similar to human thinking, GPT2 began to introduce more tasks for pre-training. The innovation here is that it uses a self-supervised model to perform supervised learning tasks. The model trained in this way can perform well on downstream tasks without training for downstream tasks. In other words, the capability has been greatly expanded, but the alignment at this time is still relatively weak, and fine-tuning cannot be completely removed in practical applications, which lays the foundation for zero-shot leaning. To solve the alignment problem, GPT3 uses a larger model, more data, and optimizes the in-context learning training method, that is, to fit prompts close to human language during training to guide the model what it should do. This further improves the model's zero-shot learning capabilities. In short, the language model is moving in an increasingly larger direction.



As shown in the comparison chart in the GPT3 paper above, zero-shot is extremely dependent on large language models (LLM). It can be said that the development of language models starting from GPT3 is no longer relevant to ordinary people who lack resources. The development of natural language processing has fully entered the era of super-large language models, but this does not affect our understanding and reference to its ideas.
ChatGPT also relies on a large-scale language model (LLM) for cold start. The specific process is shown in the figure:

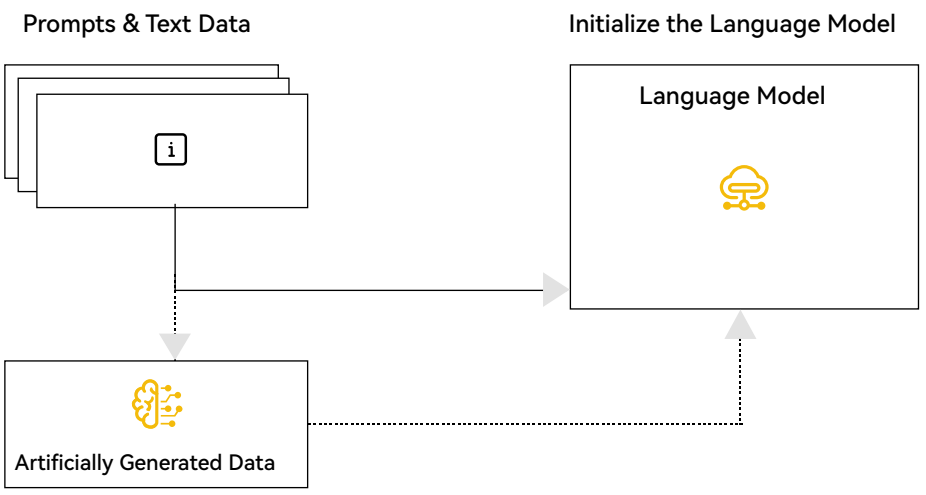


Figure 2 Initializing the pre-trained language model

Obviously, since the amount of artificially generated data involved in the initial model fine-tuning is very small, it is a drop in the ocean for the training data of the entire language model. Therefore, when initializing the language model, this step of fine-tuning is probably dispensable for ChatGPT as a whole.

Although the Capability and Alignment of the carefully designed LLM have reached a very good level, the language model obtained by pre-training or adding some supervised text fine-tuning is ultimately unable to cope with the complexity of the real language environment in which humans live. This model often exposes the following defects in practical applications:

1. Providing invalid answers: not following the user's clear instructions, answering questions that are not asked.

2. Fabricated content: fabricating unreasonable content purely based on the probability distribution of text.

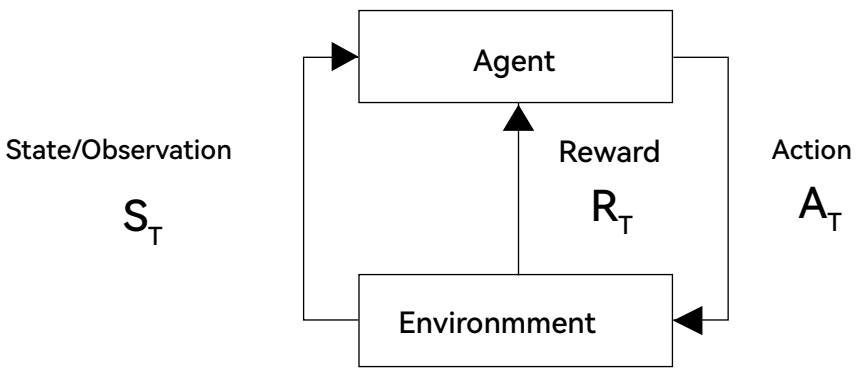
3. Lack of explainability: It is difficult for people to understand how the model makes specific decisions and it is difficult to be sure of the accuracy of the answer.

4. Harmful content bias: The model obtains bias from the data, resulting in unfair or inaccurate predictions.

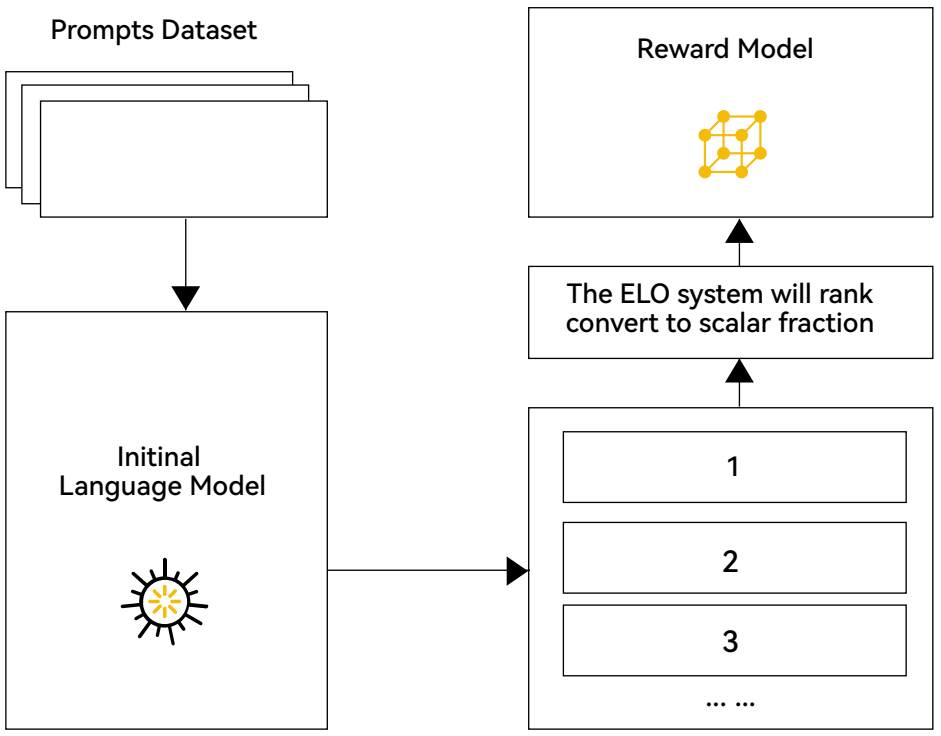
5. Weak continuous interaction ability: long text generation is weak, and the context cannot be continuous.

Training human preference models

In order to further enhance the effect of language models, people have tried to introduce reinforcement learning into language models. However, since it is difficult for machines to measure the quality of natural language output, this research direction has been developing slowly and is not favored by professionals. Although DeepMind has long proposed the RLHF (Reinforcement Learning with human feedback) training method, it has not been effective in actual products. OpenAI used a small-scale GPT3 model in InstructGPT to produce better results than the original large GPT3 after fine-tuning it with RLHF, which witnessed the power of RLHF. The subsequent ChatGPT really promoted RLHF.



Recalling the original reinforcement learning framework, the agent must continuously optimize its own strategy based on the reward signal given by the environment. In the scenario of our chatbot, the language model is obviously an agent that outputs text (action) based on the user input context (Environment). So what defines this reward function? As mentioned earlier, only humans can evaluate the quality of the output text, so let people act as the reward function, which is the so-called human feedback. However, this update process needs to be carried out continuously. Obviously, people cannot always give scores. So why not create a deep learning model to learn the process of human evaluation of output quality, so there is a reward model (Reward Model), as shown in the figure.



Manually rank the satisfaction of the output results of the model

Reward (preference) model training framework

The reward model is actually to learn human preferences, so it is also called a preference model. Its basic goal is to obtain a scoring model that receives a series of texts and outputs a scalar reward, which represents the human preference for the quality of the input and output in the form of a number. The key is that this model should output a scalar reward so that it can be seamlessly connected with existing RL algorithms. The reward model is basically based on other language models or trained from scratch through Transformer.

OpenAI uses the prompts submitted by users through the GPT API in the past, and then uses the initial language model to generate a series of new texts as prompt-generation pairs. Then human trainers sort the texts generated by the initial LM. Although our original idea was to let humans directly score these outputs, this is difficult to do in practice. Different scoring standards of people can easily lead to deviations from the actual scores. Sorting can also be used to compare the quality of multiple model outputs and create a better regularized dataset. There are many ways to rank texts. One successful way is to let users compare different texts output by the language model based on the same prompt. By comparing the outputs of the two models, and then using methods such as the Elo rating system to generate relative rankings between the models and the outputs, the rankings can be standardized to the scalar reward signal we need.

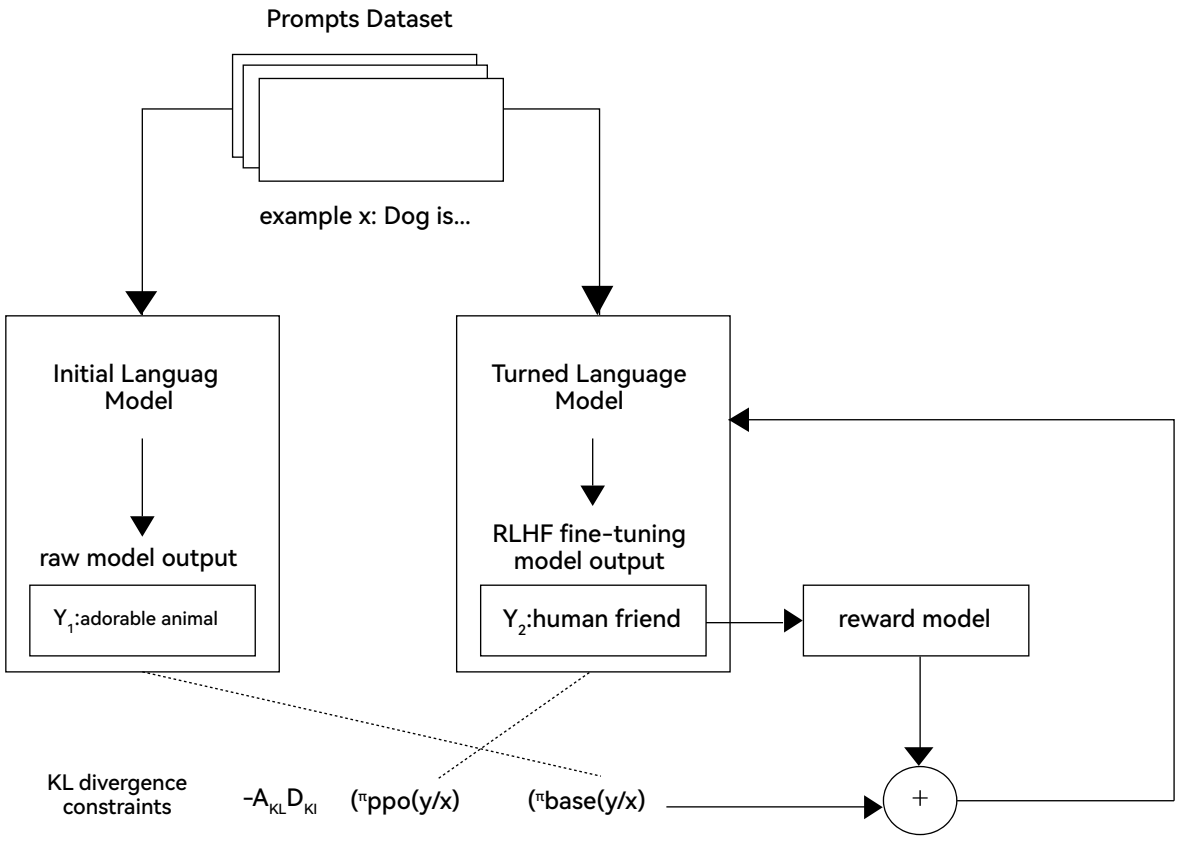
At this point, the two prerequisites of the RLHF system have been met. The next step is to use RL to further fine-tune the language model.

Reinforcement learning fine-tuning

Although the industry has almost declared that reinforcement learning is not suitable for language models, there are still many institutions and researchers exploring the feasibility of reinforcement learning to fine-tune all or part of the language model parameters. OpenAI is the most representative one. ChatGPT uses the mature SOTA reinforcement learning model PPO proposed by OpenAI itself to fine-tune the language model. Currently, the only RL algorithm that has succeeded in language models is PPO. So let's take a look at how this fine-tuning process is described as an RL problem.

Obviously, the policy is a language model that accepts Prompt to return a text sequence (or just a probability distribution over the text). The action space of the policy is all the tokens corresponding to the language model vocabulary (usually on the order of 50,000), the observation space is all possible input token sequences (so the state space is on the order of vocabulary size ^ input token size), and the reward function is determined by the above preference model and policy transfer constraints. So the whole process is roughly like this:

➪ Sample a prompt from the training set: ;
➪ Generate a text sequence from the original language model, and generate a text sequence from the language model of the current fine-tuning iteration;
➪ Input the text generated by the current strategy into the preference model to get a scalar reward;
➪ Compare the text with , and generally use KL divergence to calculate the difference between them. This serves as a change constraint to prevent the model from generating text that can deceive the preference model but is nonsense;
➪ Combine and to get the final reward function for RL update: , but when OpenAI trained InstructGPT, it also added additional pre-trained gradients on the human annotation set on this basis;
➪ The next step is to perform online updates by maximizing the return of the current batch, just like ordinary PPO.



Contract layer design
The contract layer of the GoldChain ecosystem consists of multiple built-in contracts and smart contracts customized for transactions, and cross-chain relay is realized on this basis, so that the two chains of the GoldChain ecosystem can achieve trusted cross-chain interaction. Huobi Chain-VM uses WebAssembly (WASM) to execute smart contracts. WASM can support multiple programming languages, uses binary encoding, occupies less storage space, and has superior performance during program execution. WASM generates an intermediate language - bytecode, which can be compiled using the compilation tools provided by the GoldChain ecosystem. When calling a contract, the deployment interface deploys the bytecode on the chain. After successful deployment, a smart contract account will be created on the blockchain, and the contract bytecode and corresponding ABI (Application Binary Interface) are stored in the account. Users use the specified contract account name and contract method to interact with the smart contract using ABI to call the smart contract. Finally, in order to prevent problems caused by the failure of contract logic execution, the GoldChain ecosystem will refer to the Ethereum process and use require and assert to solve it.

KYC&AML blockchain digital identity confirmation

To implement KYC and AML management on the transaction chain of the GoldChain ecosystem, a trusted digital identity standard C-UID (COAC Chain - User Identity) must first be established on the chain. C-UID is unique. Citizens of various countries register their personal information on the chain after KYC identity verification. Users can manage their personal information and digital assets based on C-UID.

C-UID consists of the following parts:
Basic information, such as name, gender, nationality, certificate type, certificate number, contact information, etc.;
Advanced information, such as credit, education, work, social and other related data;
Digital asset information, the status of digital assets held by individuals;
Account public and private keys, used to sign, encrypt and authorize C-UID data.

Note: Institutional accounts must be associated with legal person identities, and a legal person can register multiple institutional accounts.

Creation and verification of C-UID
Users submit information to create C-UID by themselves, and the regulatory node verifies the authenticity of the information. After the verification is passed, the verification content is signed, and the personal information is encrypted and registered on the chain. In the verification cycle of C-UID, verification judgment is triggered when C-UID is needed, and the re-verification cycle is 6 months. Generally, verification is not required.

Data authorization
In order to better protect personal privacy, except for the regulatory node, which has the right to view the personal data of C-UID, any other person or organization can view the data of other people's C-UID only with the authorization of the person himself. When the user authorizes others to view the data, the authorized user, authorization time, specific purpose and other factors can be set in the smart contract, and the authorized person is required to use the relevant data only in a trusted execution environment. All query records will be registered on the chain for accountability.

Security protection
In order to protect the user's identity information security, in the GoldChain ecosystem, if the user loses the data private key, the identity will not be lost. The identity can be verified through the regulatory node and the data private key can be reset; in order to prevent the private key from being stolen and disclosed to the entire network, the user himself can also modify the private key.

Cross-chain technology

The GoldChain ecosystem adopts a dual-chain structure, so it involves cross-chain technology. The GoldChain ecosystem will develop H Protocol, which uses SPV verification + HTLC-like main chain locking cross-chain technology. The traditional SPV verification mode often has the phenomenon of long confirmation time and low efficiency, but the GoldChain ecosystem adopts the DPoS mechanism, which cleverly improves this problem and can complete the extremely fast verification of cross-chain transactions.

Take two users UserA and UserB on the transaction chain as an example, where UserA and UserB own a certain number of tokens. UserA and UserB reach an agreement (such as cross-chain data transfer), and then UserA needs to pledge a certain number of tokens and use a side chain to complete the agreement. The agreement stipulates that after UserB completes a task (such as completing cross-chain data transfer), he can obtain the token pledged by UserA on the side chain. During this process, UserA can check the remaining number of pledged tokens at any time, and UserB can also check the remaining number within his modifiable range at any time. And UserA can decide to terminate the entire agreement at any time. After UserA terminates the agreement, the remaining pledge will be returned to UserA's main chain account, and UserB will also obtain UserA's token deducted during this agreement process.

For example, in the initial case, the number of tokens owned by UserA and UserB is {UserA:1000, UserB:0}. First, UserA starts the protocol and generates a sidechain; then, UserA and UserB reach a cross-chain data transfer agreement, and UserA pledges 100 tokens to the sidechain. After UserB completes part of the cross-chain data transfer, it deducts 10 tokens on the sidechain. After completing the above process, UserA finds that there is no need to continue the transfer, so he chooses to terminate this agreement, and the transfer of tokens on the sidechain will be synchronized to the main chain. Finally, UserA revokes the entire sidechain. The asset changes of UserA and UserB during the whole process.

The above example is a simple contract between UserA and UserB. We can apply the protocol to multiple roles in the same way (UserB can be multiple users). The following is a specific example to describe the entire protocol working process:
A. Initialization: Assume there are four users A, B, C, and D. User A sends a special transaction Tx.init to initialize a data, including a permission table {user B: modify, user C: modify, user D: readonly} and a mortgage list {user B: 100, user C: 50} (i.e., 100 tokens are mortgaged to user B and 50 tokens are mortgaged to user C). During the special transaction, 150 tokens of user A are locked (deducted), and their value is the sum of the mortgage list;
B. KDC (Key Distribution Center) takes this Tx.init, saves the file ID, including the permission table {user B: modify, user C: modify, user D: readonly} and the mortgage list {user B: 100, user C: 50};
C. User B sends a modification HTTP request req-write to KDC. KDC determines that it has permission according to the permission table, records the modification of user B, and returns success;
D. User C sends a read HTTP request req-read to KDC. KDC calculates the final value based on the initial value and all modifications and returns it to user C;
E. User A sends a termination HTTP request req-terminate to KDC. KDC stops serving the requested fileid. Then, KDC sends a special transaction Tx.terminate to return the remaining mortgage amount of user A and increase the user amount in the mortgage list.

Development Plan

GoldChain is an innovative public blockchain project that aims to create a new digital gold ecosystem by combining the advantages of AI supercomputing power, blockchain technology, and the gold industry. The following is a detailed roadmap for the future development of GoldChain, including planning in terms of technology, ecosystem construction, market expansion, and partners.

Phase 1: Technology R&D and platform building (Q1-Q4 2024)

1. Core technology research and development
Blockchain platform construction: Develop and deploy GoldChain's public chain infrastructure to ensure that it can support high-throughput, high-concurrency transactions and provide decentralized security.
AI supercomputing power platform construction: Establish and optimize the AI supercomputing power platform to support the rapid execution of smart contracts and the efficient application of cross-chain technology. Develop AI algorithms for smart transactions, market forecasting, smart contract optimization, etc.
RWA (AI-Wrapped Reserve) protocol design and implementation: Implement the RWA protocol to ensure the digitization of gold endorsement and enhance the liquidity and value transparency of gold in the blockchain.

2. GoldChain wallet and application development
Develop the GoldChain wallet to support the storage and transfer of RWA tokens and gold-related digital assets.
Complete the user interface and experience design to provide a simple and easy-to-use blockchain operating environment.

3. Security construction and compliance
Complete the construction of the network security system to ensure the confidentiality, integrity and availability of transaction data.
Complete the connection with global regulatory requirements to ensure project compliance, especially in the US market, by obtaining MSB licenses and other qualifications to ensure legal operation.

4. Early user and developer community building
Start community building, establish developer forums and technical support platforms, and attract blockchain developers to participate in GoldChain's technology development and innovation.
Carry out early user promotion programs to attract gold investors, blockchain enthusiasts and cryptocurrency users to join the GoldChain network.

Phase 2: Ecosystem construction and market promotion Q1-Q3 2025

1. DeFi and financial ecosystem construction
Smart contract market: Launch decentralized finance (DeFi) applications based on the GoldChain platform, including gold lending, gold derivatives trading, gold asset management and other functions.
Gold digital derivatives: Design and launch innovative financial products related to gold, such as gold-pegged stablecoins, gold options, etc., to provide investors with more choices.
Cross-chain interoperability: Develop cross-chain protocols to ensure that GoldChain can seamlessly connect with other public chains (such as Ethereum, Bitcoin, etc.), and support asset transfer and data interaction between different chains.

2. Partner expansion and ecological cooperation
Cooperation with gold mining companies: By establishing strategic partnerships with major global gold mining companies, we ensure the authenticity of gold endorsements and gold data and create a reliable gold chain.
Cooperation with financial institutions and asset management companies: Cooperate with financial institutions such as banks, securities companies, and fund companies to introduce GoldChain into the traditional financial market and provide new channels for gold investment.
Partner expansion: Establish cooperation with other blockchain projects, industry associations, etc. to jointly promote the development of the GoldChain ecosystem.

3. Marketing and brand building
Global publicity and promotion: Promote the GoldChain project through multi-channel marketing such as online advertising, social media, and blockchain industry exhibitions to enhance brand awareness.
User education and training: Popularize relevant knowledge such as blockchain, gold investment, and AI technology through online and offline activities, training courses, etc., to enhance user participation and project recognition.

Phase 3: Product Improvement and Global Expansion Q4 2025-Q2 2026

1. Smart Contract and AI Technology Optimization
AI Risk Assessment and Market Forecast: Optimize the execution efficiency of GoldChain's smart contracts through AI computing power, and provide users with more accurate market trend forecasts and investment advice.
Optimize the security of smart contracts: Strengthen the automated review and optimization of smart contracts, improve the security of the system, and avoid vulnerabilities and attacks.

2. Gold cross-chain protocol and asset integration
Global liquidity of gold assets: Ensure that the GoldChain platform can support the transfer and trading of gold assets worldwide, especially through the connection with other financial markets through cross-chain protocols to promote the liquidity of gold assets.
Integrate global gold market data: Integrate real-time data and prices of the global gold market to ensure that the price of gold assets on GoldChain is synchronized with the real market, and enhance its transparency and credibility.

3. Global market expansion
Enter the Asian market: Focus on developing markets in major gold-consuming countries such as China and India, and attract local investors and financial institutions to participate in the GoldChain ecosystem.
European and American market expansion: Launch more financial products in mature markets such as the United States and Europe, and establish local compliance guarantees to attract more institutional investors.

4. Deep cooperation with more industries
Gold as a means of payment: Promote the application of gold in the payment field, cooperate with major payment platforms and merchants through the GoldChain network, and promote the popularization of gold as a means of payment.
Cooperation with logistics and supply chain: Improve the supply chain management of gold through blockchain technology to ensure the transparency of the source, transaction and storage of gold.

- **Phase 4: Comprehensive development and long-term ecological stability Q3 2026 and beyond**

  1. Continuous innovation and application of AI supercomputing technology
  Further enhance computing power: Through continuous investment, improve the AI supercomputing platform capabilities of GoldChain and provide stronger computing support, especially in big data analysis and smart contract execution.
  Deepen the application of AI in gold investment: Further optimize AI algorithms to improve the level of intelligent decision-making in the gold market and help users make investment decisions more accurately.

  2. Decentralized Autonomous Organization (DAO) on the Gold Chain
  Promote the construction of decentralized autonomous organizations (DAO): Establish a decentralized governance model so that participants in the GoldChain community can directly influence the decision-making of the platform and enhance the cohesion and participation of the community.
  Global governance mechanism: Through a decentralized governance mechanism, ensure that global users, partners and stakeholders can equally participate in the management and development of the project.

  3. Sustainable development and environmental protection
  Green mining cooperation: Cooperate with organizations in environmental protection and sustainable development to ensure that the gold endorsement of the GoldChain ecosystem comes from gold mining companies that meet environmental protection and social responsibility requirements.
  Blockchain's support for environmental protection: Use GoldChain technology to help monitor and manage the environmental impact of gold mines and promote innovation in green mining.

  4. Continuously improve user experience
  Diversified products and services: According to user needs, launch more innovative financial products and services, such as gold-based asset management tools, personalized investment portfolios, etc.
  Optimize platform usability: Continuously improve GoldChain's user interface and experience to ensure that users can easily access and operate the platform and promote the popularization of blockchain technology.