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## Libra-Pi Community White Paper

### Libra's first Pi Network forked community

#### Foreword:

One. Libra-Pi: The first community fork network in the Libra ecosystem

Libra-Pi is the first Pi Network community fork network in the Libra ecosystem. It has the most advanced technology-based ecological support and a strong community-based consensus network. Libra-Pi will implement the Pi and Libra ecosystem in an "asset transition" manner. 1: 1 asset airdrop of assets.

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can use Facebook's global user system of more than 2 billion to achieve blockchain innovation. High-efficiency asset circulation and transaction payment of technology finance.

Pi Network is a generation of encrypted digital asset network originated from Stanford. The number of mobile terminal coverage has reached one million worldwide, and the number of users has continued to rise. It has become a newly-anticipated new network. However, the popularity of Pi is gradually increasing, but it is being restrained. Constraints such as local centralization restrictions and restrictions on transactions cannot achieve real-time circulation and recursive value of Pi assets.

Therefore, the core community of Pi Network derives Libra-Pi in the form of "community fork", which will truly realize the free circulation of assets originating from the community. Libra-Pi technical

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volunteers who have worked in the Facebook blockchain department will Pi was introduced into the Libra ecosystem and pushed Pi to a billion-level mainstream society. This is the first community fork network in Libra.

## two. Pi Network

As the world becomes more and more digital, cryptocurrencies have become a natural trend in currency development. Pi will be the first digital currency used in everyone's daily life, marking a big step forward in the adoption of cryptocurrencies around the world.

Pi Network is a blockchain encrypted digital asset network that originated from Stanford. It is based on the Stellar Consensus Protocol (SCP) and the Federal Byzantine Agreement (FBA) to build a consensus mechanism. It is characterized by being

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more lightweight and no resource consumption.

Pi Network's mission: to build a cryptocurrency smart contract platform that ordinary people can use, which is both secure and easy to operate.

Pi Network's vision: Driven by Pi, the world's most widely used cryptocurrency, to build the world's most inclusive p2p market.

Since 2019, there have been more than 500,000 mobile APP active users in more than 100 countries. The APP has chat rooms in 43 languages worldwide.

At present, Pi Network is in the first phase, and new users join the Pi ecosystem to participate in ecological mining. The second phase is a test network, and users can try to deploy their own nodes. After the test is completed, the third phase will be launched-the main network will be launched.

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Mining is suspended, and the coins previously mined by users will be converted into mainnet coins, and trading on the online exchange will begin.

### three. Libra

Libra is an alliance chain network issued by the global ecological giant Facebook, which has more than 2 billion active users worldwide. Libra is a synthetic currency unit based on a basket of currencies. It has stability, low inflation, universal acceptance and fungibility. Libra's currency basket is expected to consist mainly of the US dollar, euro, pound sterling, and yen. The Libra price is linked to the weighted average exchange rate of this basket of currencies, and although it does not anchor any single currency, it will still exhibit lower volatility.

In the Libra network, social networks led by

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Facebook will provide Libra with more than 2 billion application scenarios, and social and financial activities are inseparable. Finance will be integrated into social networks. In the development of Internet finance (payment) and social networks, the two that originally belonged to different industry areas have completed a huge integration. Libra has a natural advantage over the existing financial infrastructure.

Facebook as the Internet infrastructure is a necessary infrastructure for the Internet generation, while bank accounts are low frequency. When Libra completes the missing financial attributes of Facebook's social attributes, the Internet generation will accept this native finance completely without a threshold and low cost Money and system. This is also beyond the existing financial infrastructure. Even the most important point is that technology and products can change.

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The genes that humans have given to people in different ages cannot be changed. The Internet needs a more native financial system. In the long run, Libra will appear in front of a new generation of users as a real infrastructure. Compared with the existing financial infrastructure, Libra has a larger and more direct impact.

text:

One. background

At present, a new round of technological and industrial revolution is sweeping the globe. Blockchain, as a disruptive technology, is leading a new round of global technological revolution. It is expected to become a "strategic source" for global technological innovation and model innovation, and promote information interconnection to value Network transformation. The trend of blockchain

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technology is irreversible. The recent entry of JPMorgan Chase Bank in the United States, the release of Facebook's Libra white paper, and the easing of technical supervision have strengthened confidence for practitioners and entrepreneurs of global blockchains.

The decentralized trust feature of the blockchain is suitable for almost all application scenarios. Since 2018, as the popularity of blockchain has risen, the industry has become more urgent about blockchain reform. In order to reduce redundant construction, improve efficiency, and improve scalability, the industry public chain concept was born. The public chain integrates the advantages of virtual asset issuance, circulation, support for the account system, "WorldState" state machine, and advanced programming of smart contracts. It hopes to provide the underlying support for one-click coin issuance and rapid chain reform for industry



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applications.

Since the release of the Satoshi Bitcoin White Paper in 2008, Satoshi Nakamoto has defined Bitcoin as a peer-to-peer electronic cash system initiated by one party and received by the other, without relying on any financial institution in the middle. The upsurge; in 2013, Ethereum founded by Vitalik Buterin added Turing's complete contract on the basis of the Bitcoin point-to-point electronic cash system, making the point-to-point digital currency programmable and can define the state process, and proposed the DApp concept; 2013-2014 In the year, digital currency exchanges and stablecoins anchored with fiat currencies began to appear, and the attributes of digital currency value storage and trading were recognized; from 2017 to the present, the third generation of global public chains have reached 3,000 times by improving the consensus mechanism TPS. On-chain governance makes the

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hard fork, hacker attacks, and node evils that plague the crypto world not only solved through technical methods but also relying on sociology and economics.

But so far, digital currency has not only replaced the centralized electronic cash system, and even the largest peer-to-peer electronic cash system application in the digital currency industry: transactions and loans are using centralized systems, and only a small number of merchants worldwide support bitcoin. Currency payment. The reason lies in:

First: The TPS of the entire digital currency industry is too low. Although the third-generation public chains have a peak TPS of more than 3000 and load Turing complete contracts, the development of currency property consensus is difficult. 80% of the digital currency consensus is attributed to Bitcoin,

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Ethereum, Litecoin and other low-performance, or Turing-complete, but established digital currencies, so even in the field of retail payments, there is a huge obstacle to the real implementation of peer-to-peer electronic payments.

Second: The consensus foundation of the peer-to-peer electronic cash system is still weak and the application development is slow. Although global digital currency users are growing non-linearly, it is reported that the development has exceeded 50 million users in the past ten years, but compared to centralized electronic cash system users, it faces Long maturity waiting period. At the same time, the blockchain industry attaches great importance to computing power incentives, and does not pay attention to community consensus expansion incentives and application development incentives, which also affects the popularity and promotion of the entire point-to-point electronic cash payment

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system.

Libra, as a product of the new generation of blockchain technology financial system, is easier than the traditional BTC and ETH blockchain single technology system for all-scenario finance. Libra can use Facebook's global user system of more than 2 billion to achieve blockchain innovation. High-efficiency asset circulation and transaction payment of technology finance. Pi Network is a generation of encrypted digital asset network originated from Stanford. The number of mobile terminal coverage has reached one million worldwide, and the number of users has continued to rise. It has become a newly-anticipated new network. However, the popularity of Pi is gradually increasing, but it is being restrained. Constraints such as local centralization restrictions and restrictions on transactions cannot achieve real-time circulation and recursive value of Pi assets.

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Adopted the first community forked blockchain network "Libra-Pi", realizing the real free circulation of community assets in the community, and committed to becoming the "BTC" basic value of the new mainstream digital ecosystem of Libra in the future, there is no doubt that Libra -Pi is the first community value circulation asset of Libra ecology.

Libra-Pi brings not only the first new cryptocurrency of the Libra ecosystem, but also not just a new blockchain product; Libra-Pi brings a completely decentralized financial network, and Reshape the traditional Internet; it will become a truly decentralized global currency based on Libra's bridge to the mainstream financial society, bringing real wealth autonomy to the world, and making people aware of the long-term significance of decentralized consensus, and experience The preciousness of privacy and self-worth promotes

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the progress of human civilization, and faces our unknown future and future self with sincerity and self-love.

A tribute to Libra, facing the mainstream billion-scale fintech ecosystem;

Tribute to Pi Network, a consensus asset for active blockchain and transaction users;

Tribute to Libra-Pi, a great community consensus fork practice based on the strongest underlying Libra.

two. Technical points

- Multi-domain protocol group payment

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According to the consensus technology, the Libra-Pi domain LD is divided into LdPos, LdPow, LdBFT, LdPOA, LDPOC and other categories. In the future, the protocol cluster may be continuously increased with the development of the blockchain.

The asset payment chain will register with LinkDomain and then enter the Libra-Pi asset chain. LinkDomain and LinkDomain interact through the Libra-Pi value circulation agreement.

Each LinkDomain contains the Block Proof protocol under the LinkDomain. At the same time, when the payment chain is registered in the LinkDomain, the information such as the registration of the payment chain will be retained in the Libra framework. Payment function.

When a payment chain wants to link with Libra-Pi

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and enter the full payment scenario of Libra, it will follow the following process:

1. First, the Libra-Pi SDK initiates a registration request for a LinkDomain in the chain in the form of a transaction. The request information includes the block format of the chain, the light node protocol, and Merkle Proof certification.

2. After receiving the request, Libra-Pi registers in LinkDomain, and the payment chain inherits all the agreements and value circulation agreements under the Domain;

3. The payment chain can regularly use the Libra-Pi application payment protocol to transfer data from the Libra-Pi, the Libra ecological chain, and the BTC ecological chain to the chain through the relay.

In Libra-Pi, there will be a number of different



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blockchain platforms, including various application-based public chains, Dapp ecological chains, and projects based on Libra's ERC2.0 platform, which will implement Libra-Pi's full-scenario payment technology. At the time of the agreement, a set of cross-protocol interactions is required between different two transactions, so the complexity of the two-to-two cross-protocols in this way will increase the combination level. Please give an example here, if there are  $N$  cross-chains, there will be a maximum of  $n(n-1)$  interfaces, although some of the  $n(n-1)$  interfaces can be integrated, obviously the design complexity is extremely high .

Therefore, in Libra-Pi, the volunteer development team introduced a Libra-bridge bridge relay chain. All ecological chains are anchored to the bridge bridge relay chain with the payment chain value anchoring protocol, so that the relay chain will Assist the verification and transfer of Libra

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ecological payment transactions.

- HotStuff protocol

HotStuff is a Byzantine fault-tolerant consensus algorithm based on threshold signatures proposed by the VMware team in March 2018. Facebook's blockchain project Libra also uses HotStuff as its basic consensus. HotStuff has two advantages:

The traditional BFT consensus generally uses a fully connected network communication method. In order to reach a consensus, multiple rounds of communication are often required between nodes, which puts great pressure on the network bandwidth. Therefore, BFT consensus is often used in alliance chain scenarios with a small number of nodes. For example, classic PBFT (Practical Byzantine Fault Tolerance) has a communication

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complexity of  $O(n^2)$ , which has been successfully applied to many In a well-known alliance chain project. HotStuff uses a threshold signature algorithm to reduce the communication complexity to  $O(n)$ , so it is more suitable for large-scale node public chain scenarios.

In addition, traditional BFT consensus, such as PBFT consensus, when a verification node finds that the master node is abnormal (including errors such as timeouts, Byzantine behaviors, etc.), it is usually not possible to directly perform master node election (also known as view change, that is, view change). It needs to wait for enough verification nodes to find the error, and then wait for the new master node to send a new-view message,

The verification node can complete the view change after verifying the validity of the new-view message. During the process of view switching, the system

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cannot normally provide external services, which is difficult for those systems that require high availability. In HotStuff, the verification node can directly switch to the new view and notify the new master node. HotStuff integrates the view switching process into the normal process, reducing the communication complexity of view switching to Linear View Change for the first time, and the system can continue to provide external services during the view switching process, which greatly improves the system's usability