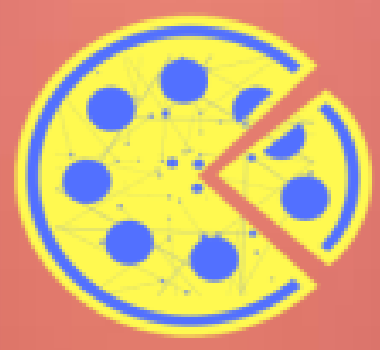


0.2 Version

HPIPS white paper

Build a high-performance computer resource sharing platform

Description

This document is the HPIPS white paper version 0.2. Based on the 0.1 version, we have focused on updating the strategic goals and technical architecture. We will continue to upgrade this document in the future to correct the HPIPS development route.

To learn more about the latest versions of the HPIPS white paper, roadmaps, teams, foundation governanc e, investors, strategic partners, and so on, please visit the official website of HPIPS. (https://hpips.io)

Disclaimer: With the rapid development of technology, in order to better promote the development of HPIPS project, we will continue to improve the existing technical scheme and organizational structure in the future, but keep the principle of community governance and the HPIPS token allocation scheme unchanged.

contact us

Address: 2/F, Chuangye Plaza, No. 48th, Yanta District Road, Xi ' an, Shaanxi , China

Zip ：710065

Email ：hpips@hpips.io

Global community ：hpips-ls

Official website ：https://hpips.io

HPIPS Foundation is registered in Singapore

Currency reward

1. Background Of The Project

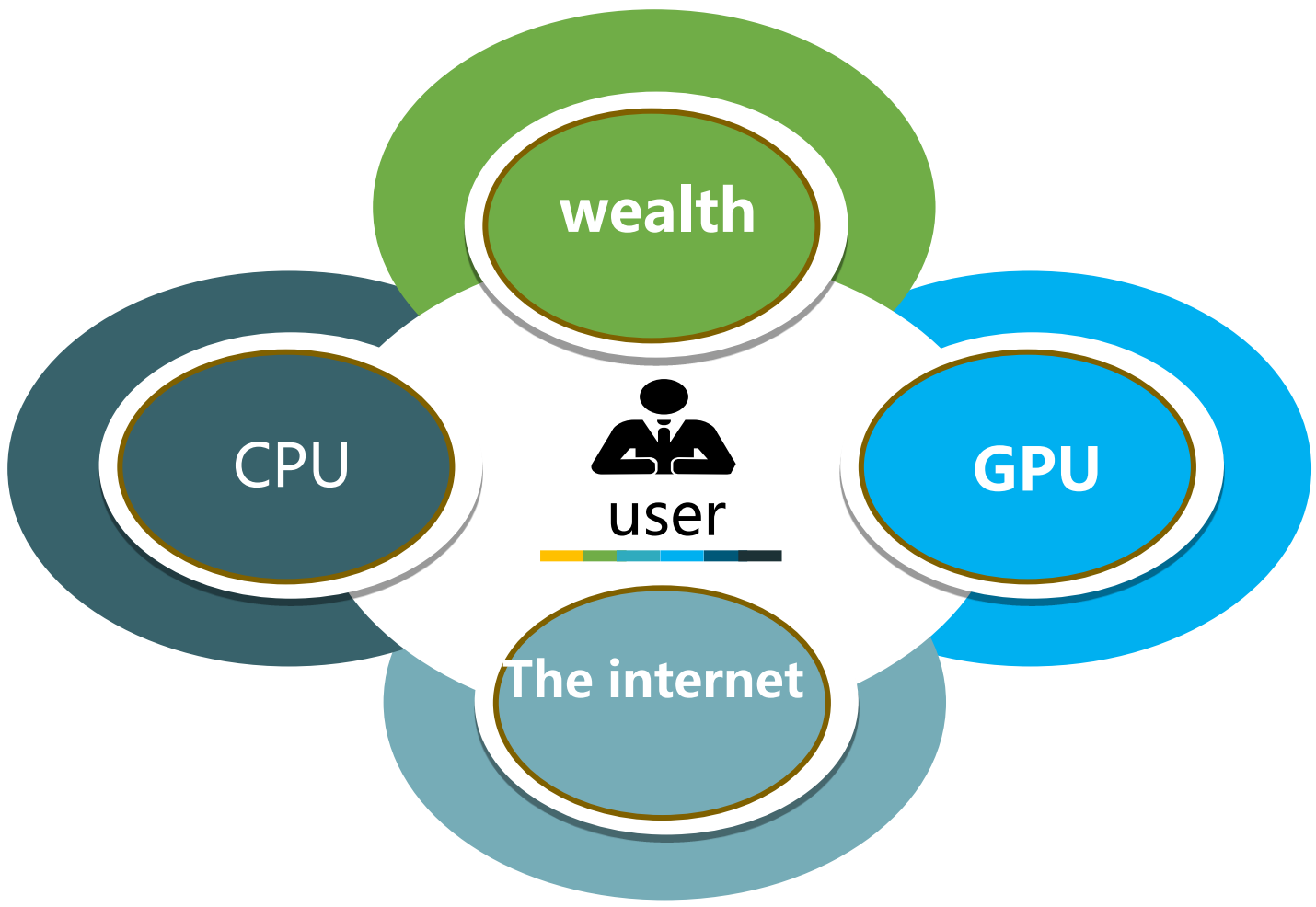
HPIPS is the world's first application that allows everyone to participate in the development of blockchains at low cost.It is HPIPS' mission to link blockchains to each computer terminal. Based on the trust mechanism of blockchain,combined with the core technologies such as distributed computing, distributed storage, content distribution network and AI,Computer resources can be shared,and realized the rational allocation and full utilization of computer resources. To build a hardware sharing platform in the area of AI.

HPIPS is an open source software platform, and its research and development process has attracted the attention of company such as Microsoft, Foxconn and Xi'an Jiaotong University.The software preview version is now online, in which CPU resource sharing has begun to run stably, and the developement version of hardware resource sharing such as GPU and hard disk has been completed. The HPIPS team has been working on technology development in the AI field and is constantly exploring the implementation of low-cost AI application platforms until it encounters blockchain technology.

HPIPS hardware sharing platform can fully utilize the idle resources of the CPU, GPU and hard disk of the personal computer, and the blockchain acts as a trust mechanism. It can perform online settlement of resource data and ensure the absolute security of the settlement data. Used to build a decentralized hardware sharing platform. HPIPS makes full use of existing hardware devices, reduces equipment costs in computer industry applications, and opens the "computer hardware sharing economy“.

After a long period of research and discussion, the HPIPS team has fully realized the sharing of computer resources and is full of confidence in building the social value of "computer hardware sharing economy". HPIPS implements "Software application and hardware separation", which will significantly reduce the costs for intensive computing tasks and storage. At the same time, in order to ensure that everyone's income is open and transparent, we use blockchain technology to settle accounts and keep accounts, which ensures that the safety of the whole settlement system, and everyone's income is fair and open and transparent.

The HPIPS team is committed to the computer hardware sharing platform to create a new "computer hardware sharing economy". HPIPS is the basic evidence in the economic community. The HPIPS community expects to push artificial intelligence and blockchain technology to a whole new level.



2. Background Of Technology

With the continuous development of computer science, human beings have begun to enter the era of computing, so the demand for computer hardware has begun to soar, and computers have become an indispensable element of this society. Due to the rapid growth of the number of computers in the past 30 years, but the allocation of computer resources has not been effectively planned, resulting in the emergence of malformations in the entire market. Computing and storage intensive projects begin to cost more on building supercomputers. Cost to form a supercomputer. However, the utilization rate of computers in the personal field is very low.

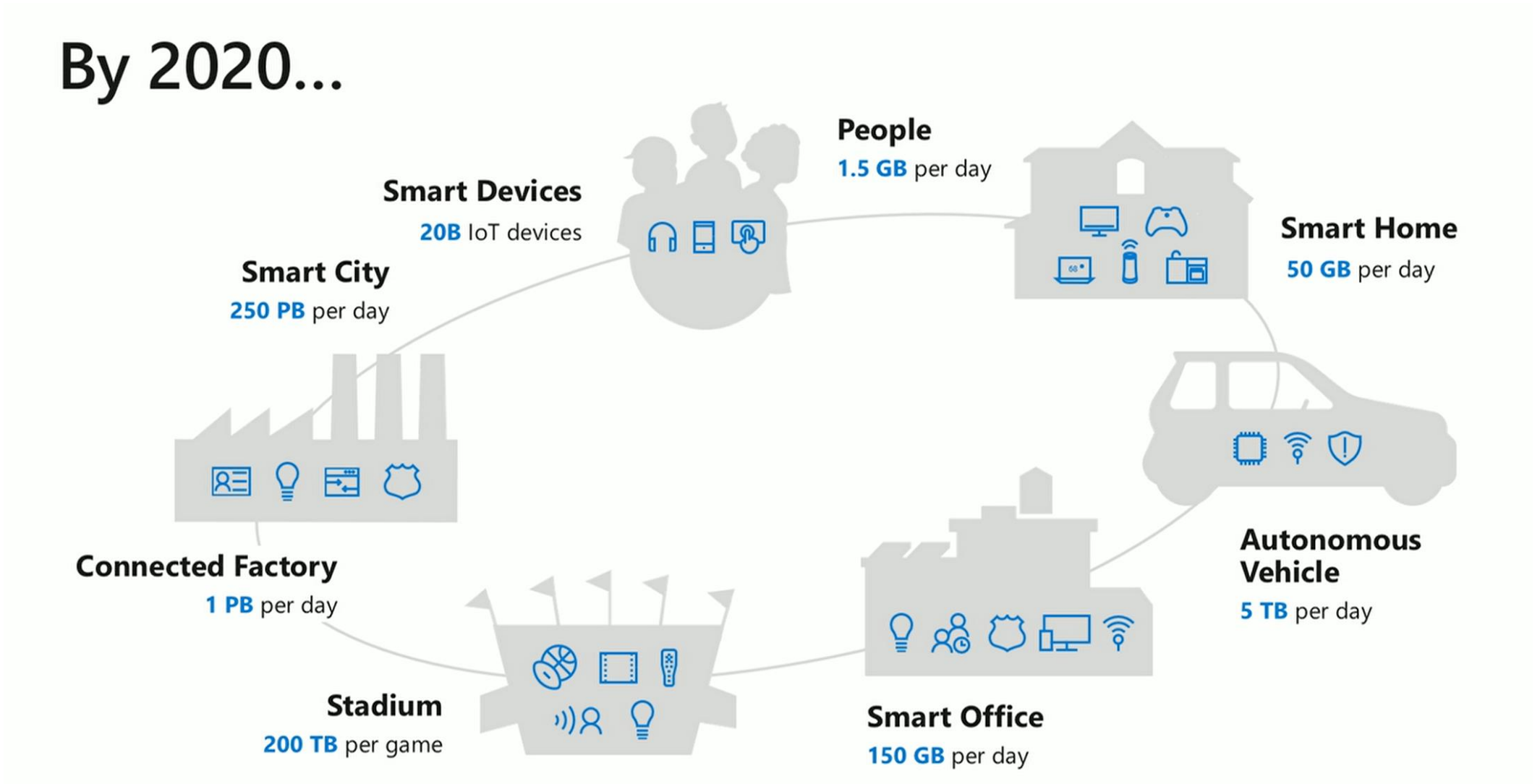
Up to now, there are approximately 1.25 billion PCs around the world, and 80% of the PC hardware utilization rate is only 20%, while recommended utilization rate is 80%. It can be seen that most of the PC is in idle state, causing a serious waste of computing resources. At the same time, we find that artificial intelligence and scientific computing require huge computing resources, and it is obvious that the construction of supercomputers is too costly. The HPIPS team believes that it is imperative to build a computing resource sharing platform on a global scale.

In 2008, Nakamoto published a paper on "Developing a Digital Monetary System Based on Digital Encryption Systems". Later, from this paper, technologies such as BTC and blockchain were derived and verified and developed through nearly ten years. The blockchain has been recognized as the world's most secure encrypted accounting system and is being used by major

corporations and projects. The core use of the blockchain is to record public information in a secure and open manner, and later evolve intelligent contracts such as automatic settlement. Evolving new technologies bring imaginative space to blockchain applications. Based on the existing technology, HPIPS will use blockchain technology for secure and open settlement services , and use distributed technology to provide computer hardware services for enterprises and individuals.

In order to cope with the peak traffic, the company spares no expense to build a supercomputer, but the computer is in a state of suspension for a long time. For a short-term user experience, the individual spends tens of thousands of dollars to purchase hardware devices , but after the experience, the machine will be stopped. The waste of computer hardware resources is already very serious. However, the demand for hardware continues to grow in the future, according to statistics, the data of the BTC single node system in 2020 is 100TB, the public data of a single city will reach 250PB/day, and the computing demand will reach 50P/S. At present, it seems that there is no way to meet this demand with existing single computer hardware technology. Enterprises and teams are looking for ways to set up large-scale data processing and storage.

From the perspective of personal computers and idle computer resources, HPIPS uses technology to fully utilize personal computer resources. Provides inexpensive hardware resource services for projects, companies, and personal services that require computer resources. Exchange the value of real money for the community ecology and settle the value of the community through blockchain technology.



While integrating computer resources, the project will pay close attention to the latest technical directions. Provides an individual-oriented technical service platform such as game acceleration, AR and VR experience, Provides an individual-oriented technical service platform such as game acceleration, AR and VR experience. Give full play to and utilize the computer hardware provided by the community in exchange for the greatest value of benefits.

3. HPIPS Strategic Target

Building a Hardware Sharing Platform

The source of inspiration for HPIPS is the problem encountered in the development of geeks. Products designed in the field of artificial intelligence development have a great demand for computer hardware, and it takes

a lot of money to purchase hardware devices. In the blockchain field, in order to run a complete blockchain node, high-level hardware equipment must be purchased. This form completely violates the concept of blockchain (everyone can directly participate in the development of blockchain, everyone has The right to acquire and store blockchain data and the fair rewards).

In the past ten years, the hardware demand in the development of blockchain has begun to show an exponential growth, deviating from the development route of the core of the blockchain. Reducing the cost of hardware in development is a matter of urgency. HPIPS is based on users and communities, and re-constructs the concept of decentralization.

HPIPS hardware sharing platform has three advantages of resource utilization: the use of node technology, the huge idle resource market, and the use of idle resources in the AI field.

1. Advantage of everyone as a node

Everyone creates a low cost blockchain for the node. The core idea of blockchain is that everyone can participate in the development of blockchain fairly and have the same rights to determine the direction of blockchain technology development. The high cost of hardware and the unfair reward mechanism based on users(the blockchain will randomly select the accounting rights, which is the essence of decentralization), and eliminate the waste of power and waste of resources from the root.

Everyone as a node has accelerated the concept of decentralization, and has fundamentally changed the current technical solutions such as POW and POS. From the technical

point of view, the security of the blockchain account is completely guaranteed, and the waste of resources and the consensus of the money to the top of the existing blockchain are completely changed. Let real democracy dominate the development and upgrading of blockchain technology, completely free from the constraints of computing power and money on the development of blockchain technology.

2. Advantages of utilizing idle computer resources

Make full use of idle computer resources. Distributed technical means are used for computer tasks. For computationally intensive engineering tasks, distributed computing methods are used for technical processing. Projects that require data-intensive storage use distributed storage to ensure data is secure and efficient. Maximize the commercial value of computer resources.

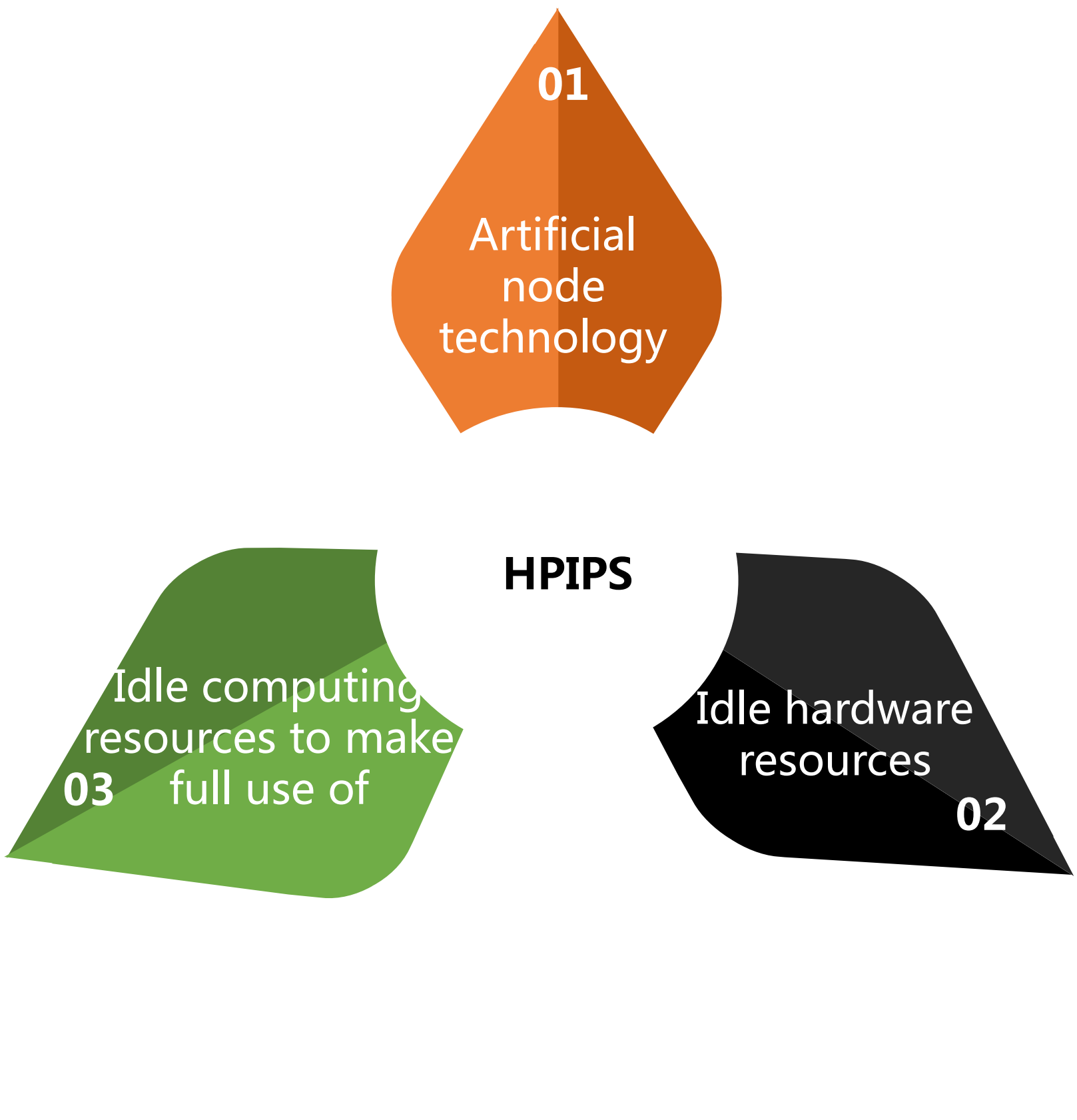
The use of idle resources can significantly reduce the cost of hardware for commercial and residential use.Personal idle resources have natural advantages in the development of blockchain, which can ensure the absolute security of settlement data and reduce the hardware and resource costs of blockchain use. Decentralized hardware resources will be an important hardware application platform in the future AI field. Compared with centralized CPU, it has lower cost, safer and faster response than data protection and so on.

3. Advantages of idle hardware resources in the AI industry

Using idle hardware resources to build an application platform for the AI industry. The hardware platform in the AI field has always been the most troublesome problem for

developers. The limited resources of individual computers must invest huge amounts of money to develop a new hardware architecture. The development process takes a long time and the effect is not significant. The application of central server, high hardware cost and slow response speed limit the development of application. For these problems, HPIPS starts from the direction of personal idle resources, handles all computing and storage problems, and calls idle resources around it, which not only has the effect of acceleration, but also has a qualitative leap for high parallel data transmission.

The full use of idle hardware resources will not only greatly reduce the hardware cost of AI applications, but also can ensure the safety and effectiveness of public data by using the advantages of decentralized resources, which greatly promotes the development of big data and artificial intelligence. Most idle resources use decentralized hardware resources, which have natural advantages for computing and data security.



4.HPIPS

A business model that can make money for users

Building a complete business model based on the following points:

1. Based on the blockchain development token;

2. Acquire the support of the market economy according to the market demand of blockchain and AI technology;

3. Use blockchain technology to complete the settlement of the token;

4. The token can be consumed, transferred, traded and realised into future assets;

5. Users can provide resources around themselves as consumer goods and digital assets.

Based on the above foundation, we can achieve a new shared business model and consumption model:

1. Users can use the resources around them to exchange their tokens;

2. The token can directly participate in the development of the project, or exchange for direct products;

3. The circulation properties brought by digital currency can be deployed globally to deploy the entire business model.

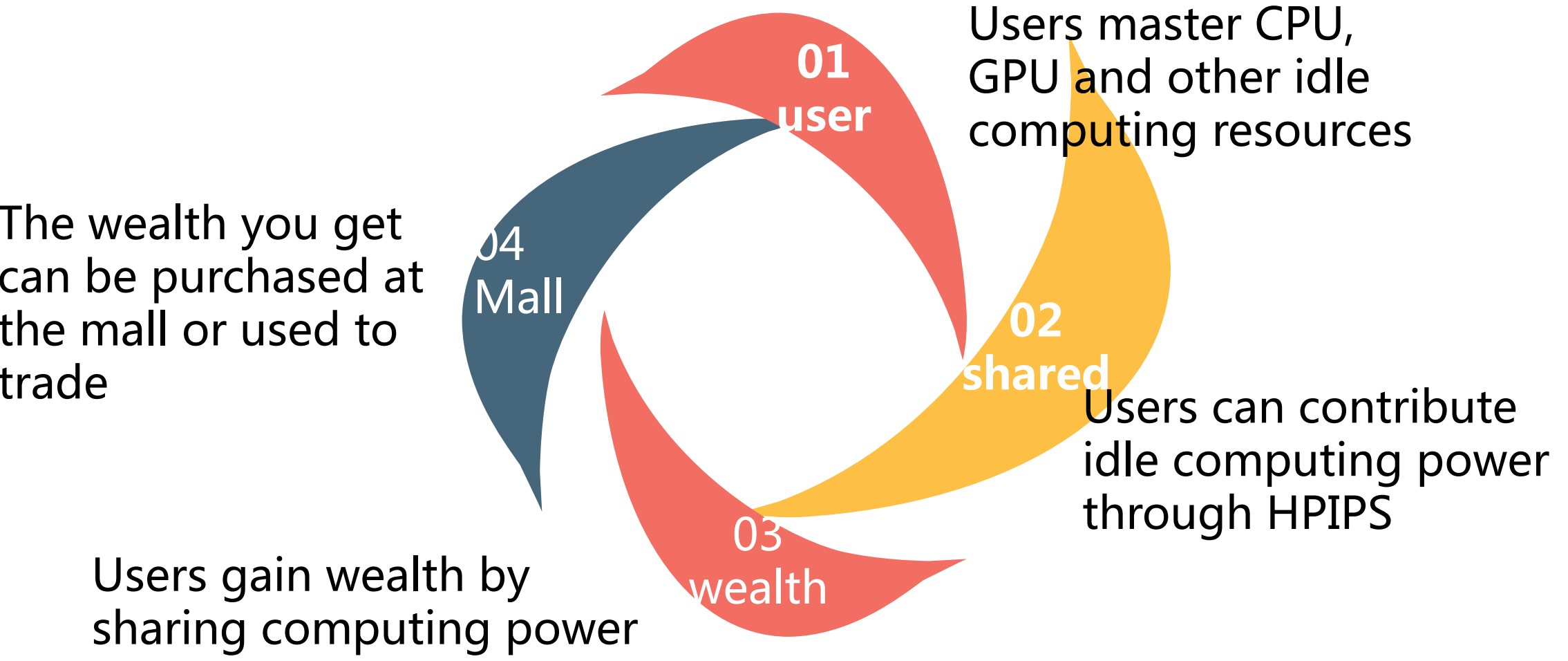
The early acquisition and participation of the token was very cheap, and the project would be supported by many ordinary users. Helping users realize the computer resources around them, that is, enjoying the benefits brought by technology, and earning early income, realizing the wealth of the future.

Users are both providers of resources and consumers of resources. We define this operation mode as "Shared". Share the resources in exchange for your needs. Now the prosperity

of the sharing economy is a good testimony to this.Social resources need to fully play their role through the sharing model.When a large number of idle resources are gathered, they will continue to access various applications of artificial intelligence and provide more security. The data storage system generates more added value. More users are urging more resources to join and more services are available. More services bring more users, more users bring more resources, and the entire sharing model forms a closed loop.

HPIPS is the only value indicator in the operation of the entire system. HPIPS is required to pay for services, purchase online hardware resources and purchase a variety of goods. All HPIPS price coins can be regarded as the "market value" of the entire resource system. With the popularization of software applications and the development of artificial intelligence, HPIPS will grow at the same time, and the continuous resources will support the entire "market value" system of HPIPS.

I hope to build a low-cost and efficient application platform through HPIPS, so that computer resources can be allocated reasonably , and become the basic platform of future AI, creating more value.



5. Technology Architecture

5.1 Distributed architecture

The architecture adopts the core concept of the blockchain and joins the mainstream distributed technology. The distributed technologies used include Open MPI, IPFS, BOCIN, Ray and other mainstream distribution technologies, and are developed in cooperation with the project team.

5.1.1 Open MPI

Git: https://github.com/open-mpi

Open MPI is not a simple combination of LAM/MPI, LA-MPI and FT-MPI, but a new MPI implementation that fully implements the MPI-1.2 and MPI-2 protocols and fully supports concurrent and multi-threaded applications (That is MPI_THREAD_MULTIPLE).

To effectively support a wide range of parallel machines, high-performance drivers, including TCP/IP, Shared Memory, Myrinet, Quadrics, and Infiniband, have been developed, and more machine support may be added based on user, market, and research needs. For network transmission errors, Open MPI provides an optional feature to detect data integrity. By using message segmentation and splitting into multiple network designs, Open MPI not only achieves the maximum available bandwidth, but also dynamically handles network device data loss when nodes use multiple network devices.

The Open MPI runtime environment provides the basic services for launching and managing parallel applications.

5.1.2 IPFS

Git: https://github.com/ipfs

IPFS is a peer-to-peer distributed file system designed to connect all computer devices of the same file system. In some ways, IPFS is similar to the web, but the web is centralized, while IPFS is a single Bittorrent cluster that uses git repository for distributed storage. In other words, IPFS provides a high-throughput content-addressable block storage model with content-addressed hyperlinks. This forms a generalized Merkle DAG data structure that can be used to build version file systems, blockchains, and even permanent websites. IPFS combines a distributed hash table with a block exchange and self-certification namespace with incentives. IPFS does not have a single point of failure, and nodes do not need to trust each other.

5.1.3 BOCIN

Git: https://github.com/BOINC/boinc

BOINC (Berkeley Open Infrastructure for Network Computing) is one of the mainstream distributed computing platforms currently developed by the University of California-Berkeley computer department in 2003. system.

It is designed to be used in the SETI@home project, but is gradually being used in other fields including mathematics, medicine, astronomy, meteorology, etc. BOINC is currently designed to provide researchers with the powerful computing power to bring together a large number of personal computers around the world. Until January 25, 2008, BOINC had approximately 549,000 active hosts worldwide and provided an average of approximately 852 TeraFLOPS (TFLOPS) computing power.

5.1.4 Ray

Git: https://github.com/ray-project

Ray is a new distributed computing framework developed by RISELab Labs (formerly known as AMPLab Labs such as Spark/Mesos) for machine learning.

In addition to the advantages of the above projects, HPIPS will also serve various blockchain projects, so that users' resources can meet the needs of major projects and exchange users for the value of real money.

5.2 Blockchain architecture

The blockchain framework consists of two main parts, "Data Storage Distribution" and "Byzantine Agreement".

The blockchain throughout the ecological intelligence is reflected in the process of data preservation and trading. Software development requires basic business logic and data security and reliability.

HPIPS will consider these issues at several levels.

In order to ensure data security, HPIPS uses the IPFS storage protocol to save and distribute data, while providing 51 copies of data on the IPFS network.

6. Scheme for the distribution of the token

6.1 total

The total number of HPIPS issuance tokens is 100 million.

6.2 General distribution rules

proportion	Distribution plan	Amount(Ten thousand)	Remarks
15%	Investment fund	1500	Financing 3.4 million for team development and operation
10%	Founding team	1000	
15%	Late management	1500	
10%	Community reward	1000	Provide rewards to community maintainers
50%	Community fund	5000	Community resource contribution reward

6.3 Resource contribution reward

Users use the HPIPS desktop application to provide valuable resources. HPIPS provides users with valuable services and products (including various digital currencies, network services, etc.), that is, users will receive actual revenue, and resource contribution rewards will be 90% of actual revenue per day. Settled to the user.

6.4 Issuance holding reward

In the token economy mode, the holding tokens reward system is adopted. 10% of the actual income from using the HPIPS desktop application will be converted into equivalent HPIPS tokens through the market, and will be distributed to all HPIPS holders in the form of holding tokens rewards. The amount of the token for circulation is only calculated when the pass is awarded.

Official website

Official website : https://hpips.io

Facebook: fb.me/hpips

Telegrame: @HPIPScn

A global computer resource sharing platform based on blockchain