Sharder

[The Shard @ London]

CROSS-CHAIN DISTRIBUTED STORAGE PROTOCOL | WHITE PAPER v1.0

Sharder Foundation foundation@sharder.org

Contents

Sharder

Abstract

Today's world is a data-driven society. The development of information technology and smart life brings explosion in the data growth. On one hand, the growth in storage capacity lags far behind that of data so that the demand for storage is far from being quenched, on the other hand, there is a great amount of storage space of individuals and enterprises lies idle and causes great waste of resources. Additionally, there are many pain points in current centralized storage systems, such as unencrypted, prone to data breach and abuse, alterable, impermanent, and expensive.

Blockchain is new information technology that integrates distributed storage, consensus ledger, peer-to-peer transfer, encryption algorithm, and incentive mechanism. Its congenital attributes such as decentralization, open-source, autonomy, anonymity, traceability, inalterability will effectively solve the pain points of centralized storage system. Sharder Protocol is a cross-chain distributed storage protocol based on blockchain 3.0 and aims to greatly optimize the current blockchain technology, starting with the application of distributed storage and expanding to many other commercial applications.

Technology Innovations: Sharder initiates cross-chain distributed storage protocol, and creatively introduces the role of Watcher and Prover in the network. It develops its own Sharder-UTXO model, which is compatible with the UTXO model of Bitcoin. The Sharder Chain running on Sharder Protocol is greatly upgraded in the robustness, security, privacy and availability of the system.
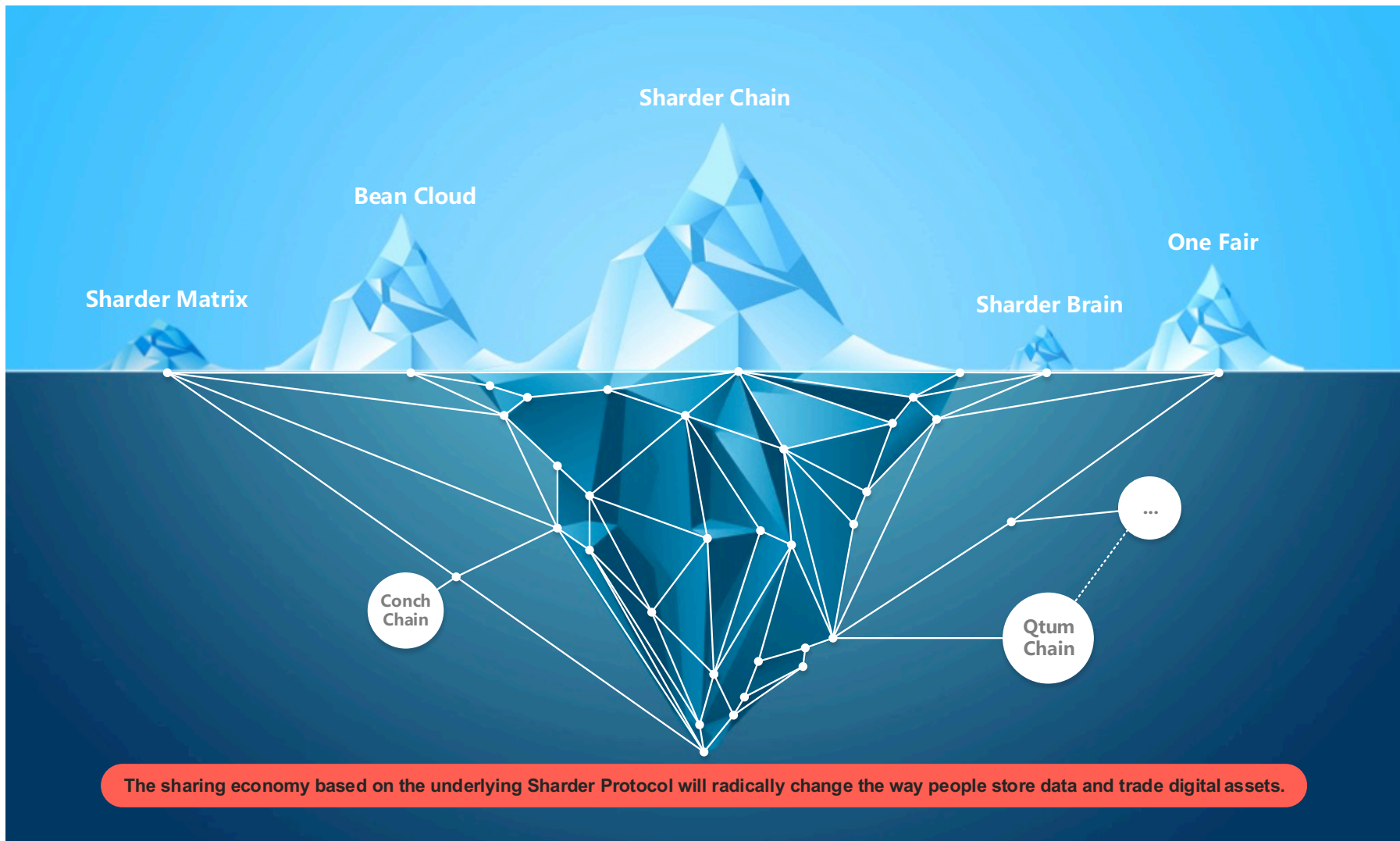
Sharing Economy: The cross-chain distributed storage network based on Sharder Protocol provides the subscribers with secure, efficient, cheap and permanent storage service, and meanwhile allows the subscribers with redundant storage space to share their extra space to get reward. Analogous to Airbnb, the multi-chain scheme based on Sharder Protocol constructs a distributed, secure, convenient and permanent sharing network.

Sharder Miners: Sharder will release its micro node miner (Sharder Hub) and storage-mining all-in-one (Sharder Box), which allow the miners to get multifold rewards by contributing both computing power and storage space to the network.

Commercial Applications: Sharder Protocol is open-source and free, any public chain or storage network could deploy Sharder Protocol, and anyone could develop DApp on it. Bean Cloud is our first application that provides the storage, proof and security service for the vast e-contacts generated in governments, banks, medical care, e-commerce, etc. There are more ahead. Sharder is developing Sharder Matrix, Sharder Brain, One Fair and other applications on data, AI and exchange. Besides the conventional data such as photos and documents, Sharder is hopefully to store any other data, for instance biological data (including gene information, growth log, medical records), and even thoughts and memories. Our mission and vision is: Store Your Stories. Your support will help our dream come true.

Administration: In the spirit of openness, transparency, and democracy, Sharder Foundation is in charge of the Sharder protocol R&D, Sharder community management, and the promotion of Sharder products and culture.

Sharder

Ecosystem

Sharder Chain

Bean Cloud

One Fair

Sharder Matrix

Sharder Brain

Conch Chain

Qtum Chain

...

The sharing economy based on the underlying Sharder Protocol will radically change the way people store data and trade digital assets.

Sharder

Product Matrix

Commercial Applications

Open Source Software

Sharder Brain

AI + Data
AI + Analysis
AI + Search
AI + Alert

Sharder Matrix

Personal life data
Medical records
Gene information
Growth log
Even thoughts and memories

One Fair

Open-source & Transparent
Free market
Storage capacity trade
Digital assets trade
Valuable data circulation

Bean Cloud

Permanent storage
Data proof
Data certificates
Legal validity

Watcher

Free market

Smart contract

Multi-chain architecture

Full client terminal

Sharder Protocol

Compatible with cloud storage

Cross-chain deployment

Digital Proof

Sharder Public Chain

Kad+ Network

Commercial API

Sharder Accounts

Credential Model

Trade Model

Sharder Hub

Configuration-free mining
One-button access
Energy efficient
Low cost

Sharder Box

Super storage
All-time online
Multifold rewards
Independent trade market

Non-profit Administration

Miners

Sharder

Background

Data Explosion: The Petabyte level data are more and more common with the explosion in data growth. An IDC report points out that the global datasphere size is skyrocketing at an annual rate of 58%, which will be even bigger in the years ahead. The global datasphere size was 8.6 Zetabytes in 2015 and will be 44 Zetabytes in 2020, i.e. 5,500 Gigabytes per capita.
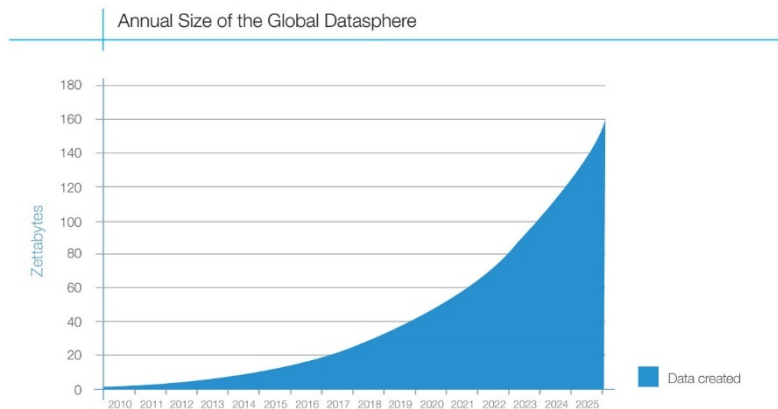

Figure1 Annual Size Global Datasphere
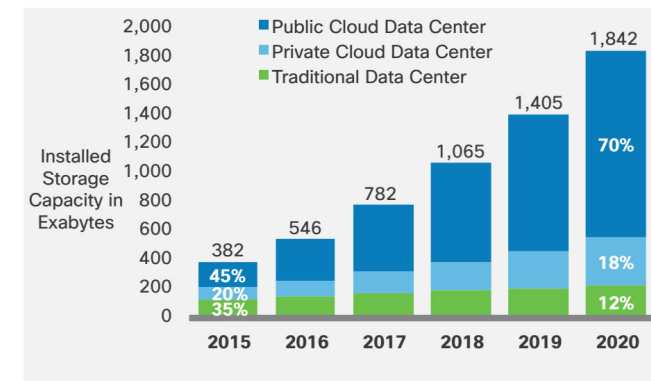IDC's Data 2025 atudy, sponsored by Seagate, April 2017

Figure2 Global Data Storage Capacity
Cisco Global Cloud Index, 2015-2020

Regionally 60% of the current data comes from developed counties such as the U.S., Japan and Germany. However, the emerging markets such as China, India, Mexico, Brazil and Russia will take the major part by 2020. China's datasphere share is only 13% for now and will go up to 21% by 2020.

The enormous data demands great amount of storage space. The global storage capacity is estimated to increase five folds between 2015 and 2020, from 382 Exabytes to 1.8 Zetabytes, of which cloud accounts for 80%. Although global storage capacity growth is soaring, it lags far behind that of data and will cause giant shortage in storage capacity.

Meanwhile, there is a great amount of storage space across the globe is left unused. Analogous to Airbnb or Uber, the potential storage capacity could be released by sharing with others. The sharers could get financial rewards by contributing the storage space to the network.

Pain Points & Solutions

Pain Points in Centralized Storage

#1 Data breach and invasion of privacy
For instance, Equifax, one of the three major credit bureaus of the U.S., was compromised by hackers in September 2017 and exposed the personal information of 145 million Americans.

#2 Access latency
Most of the time the centralized storage servers are deployed far from the end users and prone to access latency, not user-friendly.

#3 High cost
Centralized data centers are capital intensive and the big companies charge the users a lot to reach the breakeven. The end users have no bargaining power against the big companies.

#4 Idle storage space
While the big companies spend tons of money on centralized data centers, there is enormous amount of storage capacity across the global lies unused.

#5 Impermanent Storage
The centralized storage center could arbitrarily terminate its service and the storage is impermanent.

Sharder Protocol Solutions
Sharder Protocol establishes a decentralized and autonomous sharing ecosystem based on blockchain 3.0 technology, could not only cure the pain points of centralized storage system, but also radically reform the way data and value circulates.

#1 Offline excyption keep securect.

#1 Spontaneous data sharding and distributed storage

#1 The initiative Sharder-UTXO and Sharder-PAIR technology guarantees the data could not be accessed without permission.

#2 The distributed network comprises of countless nodes, and is unlimitedly extendible with the cross-chain technology.

#2 The Watcher nodes synchronize the full network status, reduce the redundant copies and adjust the data distribution to guarantee the all-time accessibility. Additionally, the smart routers greatly optimize the traffic performance.

#4 Sharder's sharing economy and incentive mechanism encourages the subscribers to bring their idle storage space to market and get rewarded, analogous to Airbnb and Uber. Additionally, Sharder is releasing miners which allow subscribers to get multifold rewards for contributing their computing power and storage capacity.

#3 Sharder ecosystem is a transparent, open-source, peer-to-peer free market, where the users propose the price and the market decides it. The sharing economy excludes monopoly and makes storage service with high quality and low price possible.
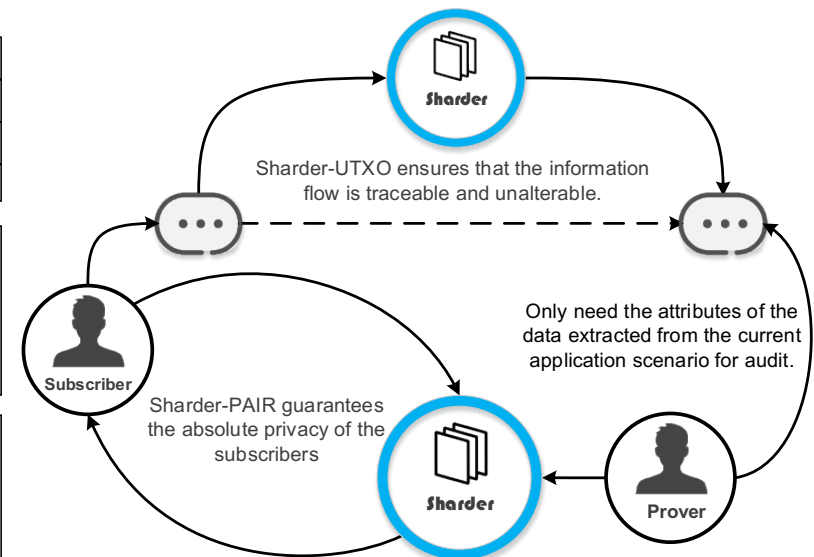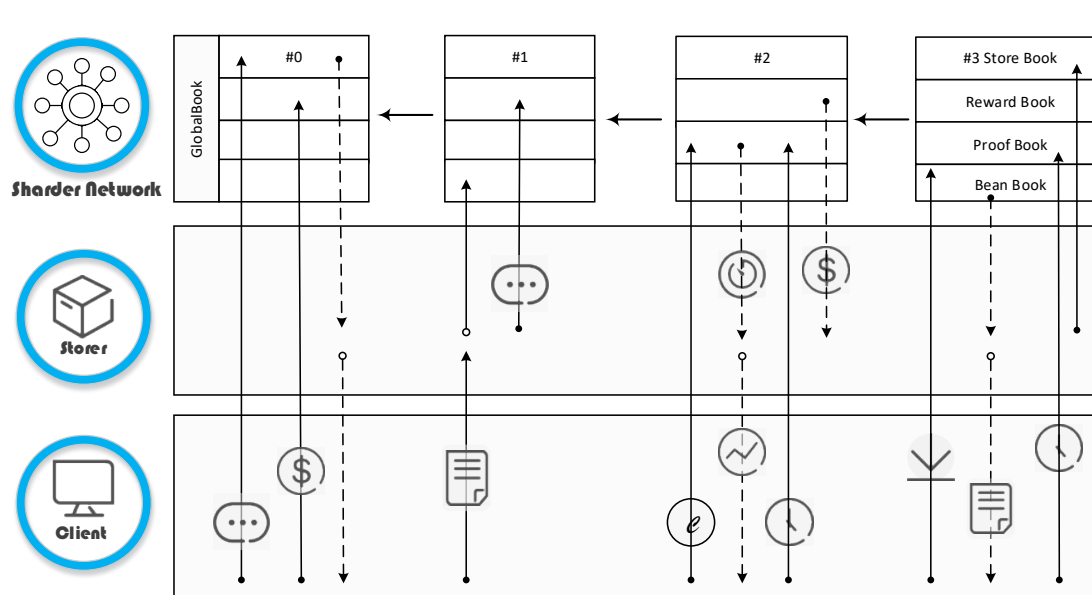
#5 The decentralized and autonomous Sharder-Network store data on distributed nodes and will always be online. Subscribers could trust their data with Sharder forever.

Sharder

Highlight | Cross-Chain & Sharing Economy

Measurability All subscribers' contribution to the network is quantified and measurable. Give more and get more.

Prover Mechanism With your authorization, the proofer is able to provide the proof of social credibility and legal validity based on the data extracted from Sharder Network.

Privacy Respect the ownership and privacy of subscribers.

Sharder Miners Sharder will release Sharder Hub and Sharder Box to allow the subscribers to enjoy multifold rewards by contributing to Sharder Network.

Cross-Chain Compatible with all kinds of public chains and various storage networks.

Sharder Protocol is "Airbnb" in blockchain storage field,

and could be one of the biggest storage provider without any hard disc.

Sharing Economy All roles on Sharder Network together form a distributed, secure, efficient and permanent ecosystem of sharing economy.

Multi-chain Architecture The multi-chain mining and cross-chain deployment guarantees the secure and efficient transfer of data and value.

Decentralization Limitless extendibility, permanent storage, all-time service

Watcher Synchronizes the full network status in real time, dynamically adjusts the data distribution with 0.999 security and availability, reduces the redundant copies and increases utilization rate. Smart routers (AI+CDN).

One Fair Transparent, open-source, peer-to-peer, free transaction of your digital assets.

Sharder

Highlight | Sharder-UTXO & PAIR

Sharder Network

Storer

Client

	#0	#1	#2	#3 Store Book
GlobalBook				Reward Book
				Proof Book
				Bean Book

Sharder-UTXO ensures that the information flow is traceable and unalterable.

Only need the attributes of the data extracted from the current application scenario for audit.

Sharder-PAIR guarantees the absolute privacy of the subscribers

Subscriber

Prover

Sharder

Multiple proof methods , contribution measurable

PoST + PoR + PoC

Initiates Sharder-PAIR and Sharder-UTXO credit models, which allow Prover to efficiently implement data audit and proof with subscribers' data privacy protected.

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Highlight | Sharder Miner

Sharder Hub
Micro node miner
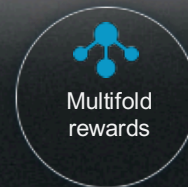
Sharder Box
Storage & Mining All-in-one

Tailor-made microchips

Configuration free

Multifold rewards

Super storage

No more arms race, no more waste of computing power and storage space, get a Sharder Hub and start enjoying the mining reward, or get a Sharder Box and earn multifold rewards (mining, storage, watcher) at the same time. We will make Bitmain in blockchain storage field.
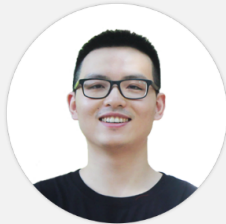
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Benchmarking

Comparison among storage systems

	amazon	阿里云 aliyun.com	Sharder	sia	STORJ	IPFS
Network	Centralized	Centralized	Decentralized	Decentralized	Decentralized	Decentralized
Online time	Occasionally offline	Occasionally offline	All-time online	All-time online	All-time online	All-time online
Privacy	Low	Low	Very high	Very high	Very high	Very high
Security	High	High	Very High	Very High	Very High	Very High
Mining time	-	-	10 sec - 2 min	30 min	-	-
Public chain	-	-	Yes	Yes	-	-
Miner	-	-	2 lines	No	No	No
Cross-chain	-	-	Yes	No	No	No
Smart Contract	-	-	Turing complete	Yes	No	No
File System	Yes	Yes	Cloud Aqua+	No	KFS	No
Peer-to-peer Market	No	No	Yes	No	Yes	No
Data Sharding	-	-	Smart sharding	No	Automatic sharding	No
Erasure correcting	Yes	Yes	Yes	No	Yes	No
Nodes in China	Yes	Yes	Yes	Yes	Yes	No
Upload speed	No data	No data	Smart-adjustable	1M/s	0.3M/s	No data
Dapp	-	-	**Dapps** Bean Cloud Sharder Matrix Sharder Brain One Fair Bean Cloud Alpha (Feb. 2018), Beta (Apr. 2018)	No	No	No

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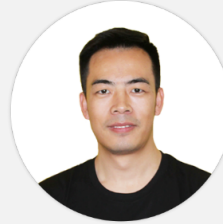
Team

Ben Xiong
CEO · CTO / xy@sharder.org

15 years of experience in programming ,B.E. in software from Shanghai Jiaotong University, Architect of Seachange, Chief Architect of Yiji Pay, Co-founder and CTO of Taogushen.com, Founder of Conch Chain

Wayne Shao
COO / wayne@sharder.org

10 years of experience in management, operating and entrepreneurship, B.E. from Tsinghua University, M.S. in Columbia University, General Manager of Egholm Maskiner (China), Co-founder and COO of Taogushen.com

Rick Wang
CMO / wb@sharder.org

6 years of experience in marketing, channel development and entrepreneurship, Marketing Director of Huangcheng Technology Co., Ltd., General Manager of Zebra Environment Technology Co., Ltd.
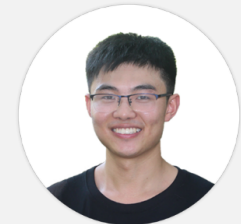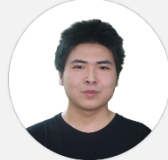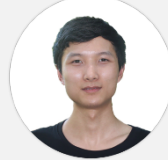
R&D Team
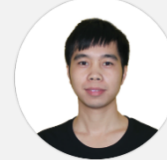
Vitty Xiong
Architect
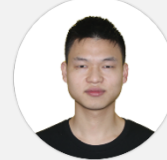
Patrick Liu
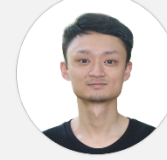Lead Programmer

Johnny Fan
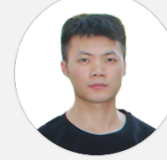Lead Programmer

Chandler Wang
Product Manager

Thomas Huang
Programmer

Vincent Lei
Programmer

Quincy Zhang
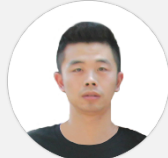Programmer

Lynn Yu
Programmer
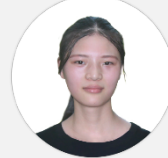
Marketing & Operating Team

Kaka Zuo
Channel Director

Greg Gao
Marketing Director

Sam Zhang
Marketing Specialist

Moon Qiu
Operating Specialist

- R&D Team led by network architects with 10+ years' experience in programming
- Multiple programmers with 5+ years' experience in blockchain
- Marketing & Operating Team with experience in various successful projects
- Young but veteran, dreamer and doers
- Global community in the U.S., Hong Kong, Australia, Philippines, and counting

Global Community

Cameron Nelson
Blockchain Expert

Yuen Wong
Marketing Lead

Erik Hohmann
Marketing

Joe Chan
R&D (Network Layer)

Pranav Burnwal
R&D (Smart Contract)

Chris Wong
Operating

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Administration & Partnership

Sharder Foundation was established in Singapore and constitutes policy-making, supervisory and executive bodies. In an open, transparent and nonprofit manner, the foundation is in charge of the R&D of Sharder Protocol and Sharder chain, the issuing and distribution of Sharder token (Sharder Storage, hereinafter referred to as SS), the administration of Sharder community, and the promotion of Sharder products and culture.

Policy-making Comprises of CEO, CTO, COO, CMO, angel investors, community enthusiasts, professionals, advisers, in charge of the daily administration, operating and strategic planning under the direction of the Council Director.

Supervisory Comprises of legal and financial advisors, in charge of the legal and financial compliance.

Executive Comprises of R&D team, financial and auditing team, administrative team, marketing team, operating team, overseas teams, in charge of the development, application and marketing of Sharder Protocol and Sharder chain.

Partnership Sharder Foundation cooperates with the following partners on application development and Sharder ecosystem construction. (listed in no particular order, and some are not listed due to privacy)

Hao Wang
Doctor from Chinese Academy of Sciences
Technology Advisor

Yuan Zhou
CEO of JFH.com of Chinasoft International
Marketing Advisor

Wenjian Zhang
Renowned Painting Artist
Art Advisor

Huasen Jiang
CEO of BornSoft
Angel Investor
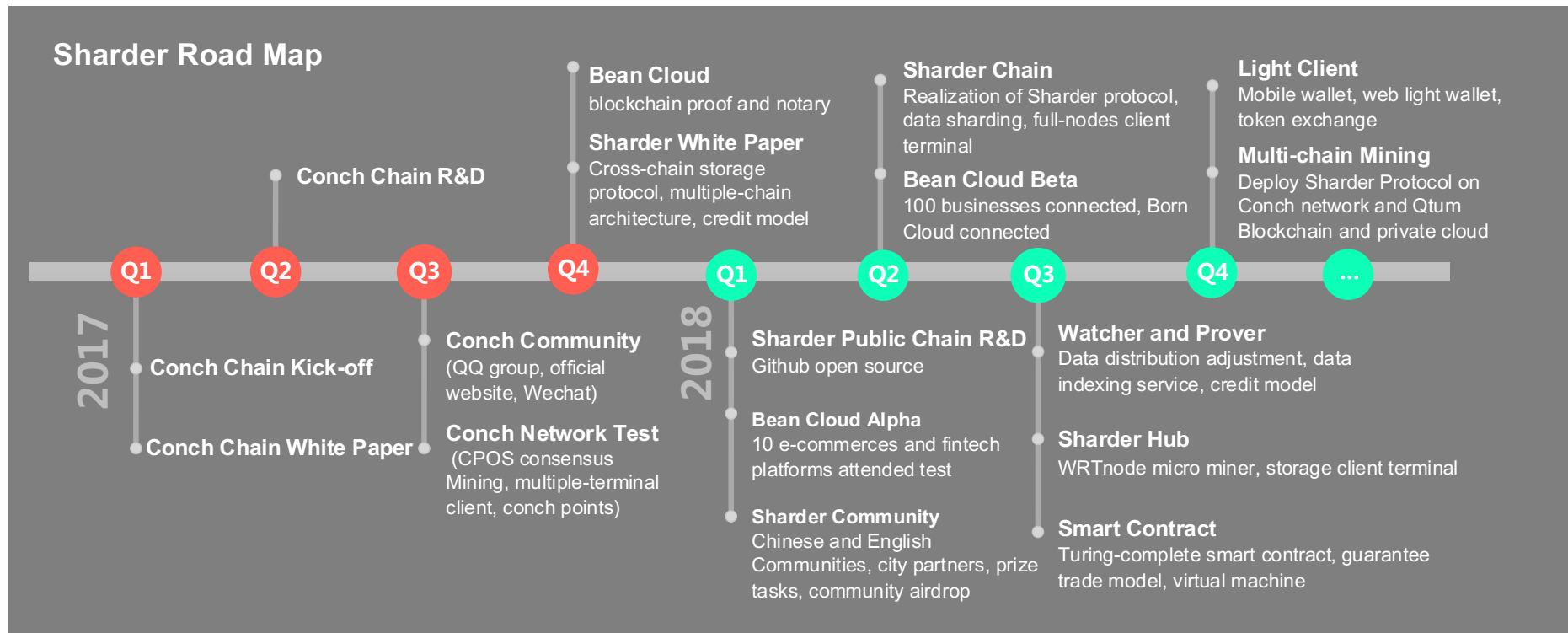
Mingjing Zhang
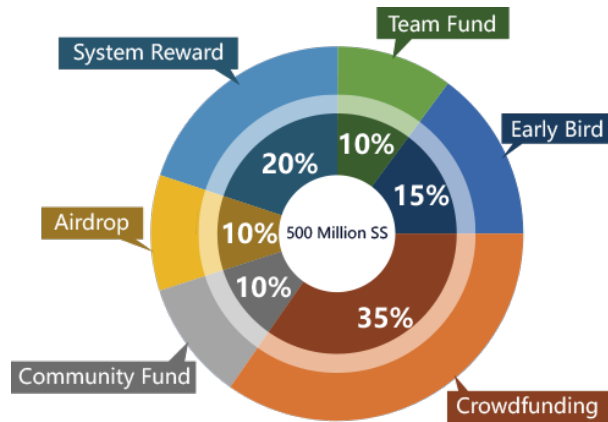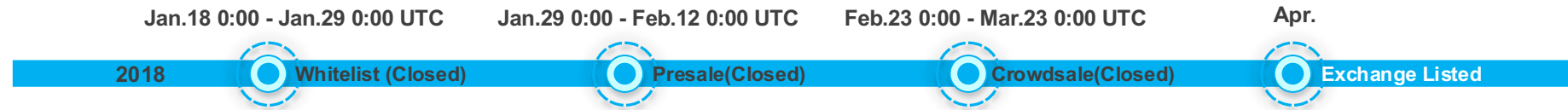VP of China Renaissance
Angel Investor

1911 Capital

Nirvana Capital

Road Map

Sharder Road Map

2017

- **Conch Chain Kick-off**
- **Conch Chain White Paper**

Q2
- **Conch Chain R&D**

Q3
- **Conch Community** (QQ group, official website, Wechat)
- **Conch Network Test** (CPOS consensus Mining, multiple-terminal client, conch points)

Q4
- **Bean Cloud** blockchain proof and notary
- **Sharder White Paper** Cross-chain storage protocol, multiple-chain architecture, credit model

2018

Q1
- **Sharder Public Chain R&D** Github open source
- **Bean Cloud Alpha** 10 e-commerces and fintech platforms attended test
- **Sharder Community** Chinese and English Communities, city partners, prize tasks, community airdrop

Q2
- **Sharder Chain** Realization of Sharder protocol, data sharding, full-nodes client terminal
- **Bean Cloud Beta** 100 businesses connected, Born Cloud connected

Q3
- **Watcher and Prover** Data distribution adjustment, data indexing service, credit model
- **Sharder Hub** WRTnode micro miner, storage client terminal
- **Smart Contract** Turing-complete smart contract, guarantee trade model, virtual machine

Q4
- **Light Client** Mobile wallet, web light wallet, token exchange
- **Multi-chain Mining** Deploy Sharder Protocol on Conch network and Qtum Blockchain and private cloud

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Sharder

Crowdsale

2018   Whitelist (Closed)   Presale(Closed)   Crowdsale(Closed)   Exchange Listed

Team Fund

System Reward

Early Bird

20%

10%

15%

Airdrop

10%   500 Million SS

10%

35%

Community Fund

Crowdfunding

- ● **Presale:** Angel investors.

- ● **Crowdsale:** sale on official website, Ethereum smart contacts, and exchange.

- ● **Community Reserve:** for community and ecosystem construction.

- ● **Airdrop Reserve:** community and exchange airdrop, test network TCC exchange.

- ● **System Reward:** minding reward, watcher reward, proofer reward, storage reward.

- ● **Team Reserve:** Vesting in 3 years period.

Legal Money Contribution: Subscribers who prefer legal money funding could go to Sharder Mall and purchase any item to get SS

Lock-up Bonus: You can choose to lockup your position before trade starts and get reward, which is 4% of the position for half-year lockup, and 10% of the position for 1-year lockup

Listing Exchange: Tentative exchanges: Binance, Okex, Gate.io, Chaoex, Ebtcbank, Aex.com, Yobit, HitBTC

Token Delivery: Contributors via official website will get SS within 7 business days after crowdsale; Contributors via Ethereum smart contact will get SS immediately

Token Return: The contribution that exceeds the hard cap will be returned to where it came from

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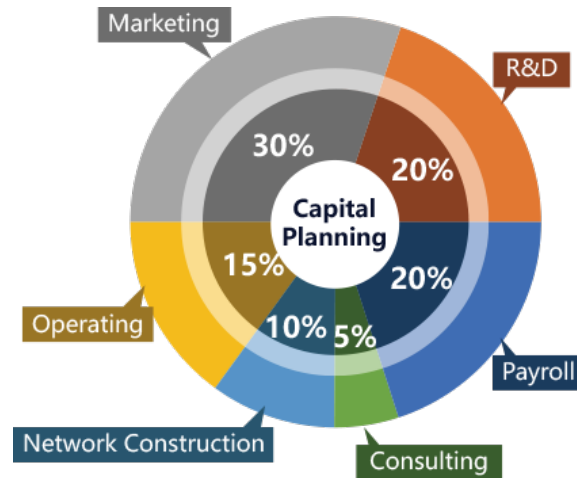
Capital Planning

3-Year Capital Planning

● **Payroll:** the compensation for R&D, marketing, operating, financial and administrative teams.

● **R&D:** R&D on Sharder Protocol, Sharder Chain and underlying blockchain technology.

● **Network Construction:** Construct Sharder Network, release Sharder Hub and Sharder Box.

● **Marketing:** land the exchanges, business development and marketing.

● **Operating:** Daily operating and community management.

● **Consulting:** Legal and financial consulting service, compliance and risk management.

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① ≤ 2.33 million USD Raised

Team of 17 (Community employees excluded)

R&D：10 (5 Sharder Protocol Developer, 3 Commercial Application Developer, 1 Mobile Wallet Developer, 1 UI Designer, 1 Product Manager, 1 Tester)

Marketing: 3 (1 Exchange Liaison, 1 Business Developer, 1 Public Relation Manager)

Operating：3 (1 Chinese Community Manager, 1 International Community Manager, 1 New media Operating Specialist)

Consulting: 1 Compliance Officer.

② > 2.33 million USD Raised

Team of 28 (Community employees excluded)

R&D：15 (5 Sharder Protocol Developer, 5 Commercial Application Developer, 1 Mobile Wallet Developer, 1 Web Designer, 1 UI designer, 1 Product Manager, 2 Testers)

Marketing: 5 (2 Exchange Liaisons, 2 Business Developers, 1 Public Relation Manager)

Operating：5 (1 Chinese Community Manager, 1 International Community Manager, 1 New Media Operating Specialist, 1 Promotion Manager, 1 Partnership Specialist)

Consulting: 2 (1 Compliance Officer, 1 Auditor).

❖ This white paper is only for your information and should not be referred to as any sort of investment innovation.
❖ This white paper should not be referred to as any sort of token sales.
❖ Sharder Foundation reserve all the right for the final explanation.

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https://community.sharder.org

https://t.me/sharder_talk

https://twitter.com/SharderChain

hi@sharder.org

https://github.com/Sharders

supersharder

https://reddit.com/user/Sharder_Protocol

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