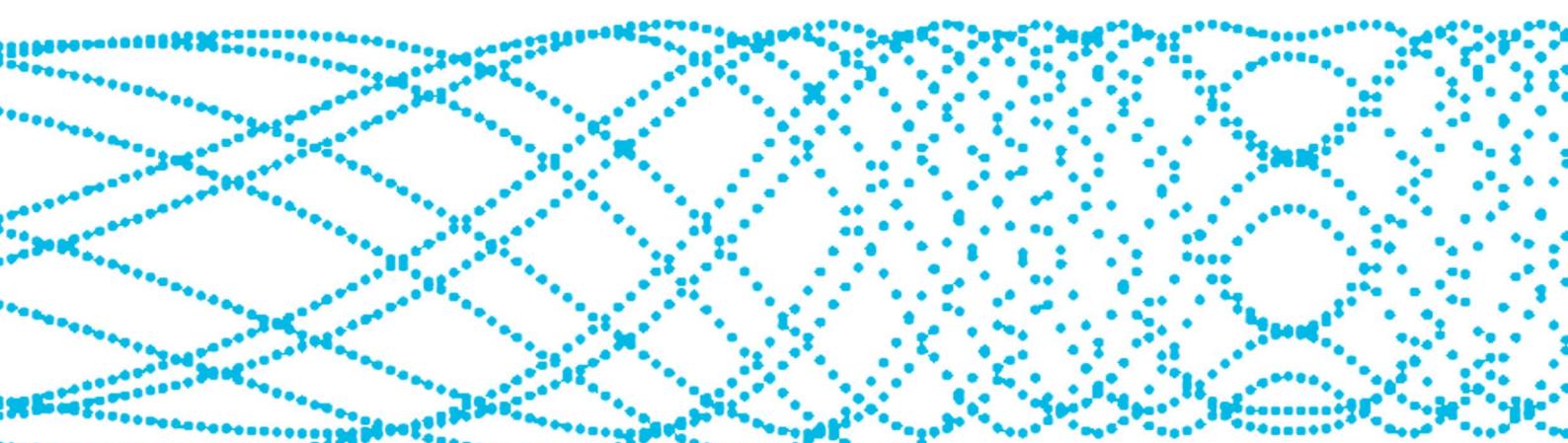




# Zipper

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# Cross Chain Message & Transaction Transfer Network



Zipper is a decentralized value transfer network that enables point to point Message communication, Transaction Transfer and Transaction Settlement across multiple blockchain networks among different financial institutions. Zipper enables and empowers rich and comprehensive blockchain-based services for global financial institutions.

The rapid development of blockchain technology has demonstrated the ongoing

megatrend of a future New Finance based on blockchain solutions. However, it is also apparent that financial institutions currently take a cautious attitude when implementing blockchain technologies mainly due to concerns of safety, regulations, lack of technical standards, etc. As a result, current blockchain infrastructure, including Private Blockchains and Consortium Blockchains developed by individual financial institutions, form disconnected and isolated silos or islands. Given the rigid demand of

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regulatory compliance in network-based communication among global financial institutions, cross-chain Message and Transaction Transfer are becoming the ultimate solutions.

In light of this, we are developing a financial-grade Public Blockchain called Zipper, which is a decentralized network that enables cross-chain Message communication and Transaction Transfers. Zipper meets the fundamental requirement for the financial industry in the following ways:

- i) Zipper's format follows the general norm and standard of Message for global financial industry, thus enabling a seamless migration of existing financial services onto Zipper.
- ii) Zipper introduces nodes for account identity KYC validation and nodes for regulatory measures in order to meet the international financial compliance requirement.
- iii) Zipper combines existing technologies with the latest crypto-technologies, such as zero-knowledge proof, to solve privacy protection problems for large-scale financial applications.

To achieve an optimal balance between payment efficiency and privacy security, Zipper employs a data separation and credit granting verification mechanism. For a specific transaction on Zipper, blockchain clearance files and transaction payment data on distributed ledgers are separated.

When the decentralized verifier for credit granting is calculating, only the encrypted use case for mathematical verification is visible; when the financial institution executes payment based on clearance files, details of the payment data are not required. The transaction is transmitted among the transaction participants of multiple institutions and the actual payment data is encrypted and shared among the transaction participants only. Zipper adopts contract-based inter-network Finance Electronic Authorization (FEA) to design and support highly complicated financial services under diverse commercial scenarios. FEA focuses on cross-chain and cross-gateway payment path design and clearance & settlement logic design, in the form of Smart Contract. The combination of business rules of the decentralized ledgers with the contract-based inter-network FEA for Zipper is configurable, in order to meet the various functional and non-functional requirement for inter-operable consensus groups.

The development team behind Zipper started researching on the index management of related accounts that are cross-blockchain and cross-gateway for financial institutions in 2013, and was granted with multiple invention patents in Canada, Singapore, China and other countries. Zipper pioneered the inter-network Transaction Transfer and Message communication from traditional bank accounts to non-bank accounts of

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**digital assets.**

In consideration of the international financial regulations and the internal network safety requirements of financial institutions, Zipper has specifically designed front-end systems for implementing blockchain businesses with banks' existing internal networks, so as to deliver fast system integration and turnkey project.

Zipper strives for an inter-connected financial world!



# Zipper

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# Background



# Background

Since the arrival of Bitcoin [1-4], blockchain [5-6] has thrived rapidly from anonymity into the mainstream in a strong upward trend. By now, blockchain has already become one of the core technologies for the financial industry [7]. Since safety, efficiency and low cost in clearance and settlement are the everlasting pursuit of global financial transactions, blockchain-based decentralized payment clearance and settlement will become the ultimate solutions in the future [8-9].

The booming of blockchain has promoted digitization of assets [10] and brought high liquidity that is cost-effective, global in nature and 24-hours open.

Blockchain-based financial innovation makes transfer of digital assets through internet a reality [11]. At the same time, various individually developed blockchains have created increasing number of isolated islands of digital assets. Cross-blockchain transfer of digital assets have become the bottleneck for the entire blockchain industry [12]. A standard that better fits the cross-chain transactions of blockchain tokens is critical for the development of blockchain financial innovation [13].

Traditional banks have made numerous attempts to transform their traditional businesses via blockchain technologies. Unfortunately, up to now there have been little practical progress [14]. The main

reason is that traditional banks are too conservative on innovation of its core system architecture. Under heavy regulation, the banking industry is concerned more about stability and defense against risks [15]. This is the result of both the society' requirement on banks and the banks' obligations, which is to provide safety and liquidity of assets for commercial entities and consumers at large scale and serves as the last fortress of trust mechanism in the market economy. In this situation, in order to safeguard their ledgers vigilantly [16], banking systems are protected behind multiple firewalls and even tiny changes of the system require complicated processes, making any innovation or reformation particularly hard or even impossible [17]. In accordance with the original intention when designing ledgers, traditional banks are heavily inclined towards security and less inclined towards innovation or flexibility [18].

Ripple [19] is an earlier blockchain-based open payment network that attempts to provide new solutions on global financial settlement for banks, payment service providers, enterprises and digital currency exchanges [20]. However, due to inherent flaws that are difficult to overcome, Ripple fails to form any deep partnership or ignite any ripple effect with mainstream financial systems. For instance, Ripple is non-compatible with laws for financial

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regulation [21-23] thus cannot be integrated with official financial entities in many countries and regions. Ripple also does not support clearance and settlement thus cannot be integrated with ledgers of financial institutions [24]. Ripple's Message system is non-compatible with current banking formats or standards, making system migration difficult. Ripple's privacy protection mechanism is faulty and business information are insecure [25].

In consideration of the issues above, we developed Zipper, a financial-grade blockchain network that is both secure and flexible. The core of Zipper is its cross-chain protocols, which provide certified Public Blockchains, Private Blockchains and Consortium Blockchains with data and Transaction Transfer services. Compliant with global financial regulation, security requirements and ISO international financial standards [26-27], Zipper is developing infrastructure-grade public blockchain network protocols based on blockchain technologies. Zipper creates effective connections between ledgers of financial institutions and distributed ledgers of blockchains; enables cross-chain transfer of transaction and information among banks; supports regulation and privacy protection requirements; meets the high efficiency requirements for transaction processing; and supports collaboration on complex financial businesses among institutions.

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# Design of Zipper



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# Design of Zipper

Zipper is the world's pioneer financial-grade public blockchain that provides certified Public Blockchains, Private Blockchains and Consortium Blockchains with data and Transaction Transfer services. The goal of Zipper is to become the largest cross-chain value transfer network in the world. Zipper is able to provide Message and cross-chain Transaction Transfer services at high efficiency and low cost. Zipper has specifically designed front-end systems for implementing blockchain businesses with banks' existing internal networks and gateways, lowering integration cost with financial institutions. Zipper is compatible with the ISO20022 standard (an ISO standard for electronic data interchange between financial institutions) and the KYC/AML requirements of financial institutions globally.

## 2.1 Consensus Algorithms

Zipper adopts a laterally extendable multi-chain structure, which not only solves the functional bottleneck of traditional single-chains and achieves concurrency significantly better than traditional blockchains, but also supports connection with other heterogeneous blockchains. Consensus algorithm is at the core for blockchain technologies. The consensus algorithms behind Zipper consist of three key protocols, namely Self Organizing Strategy (SOA), Symmetric Chain Interoperation (SCIP), and Asymmetric

Chain Interoperation (ACIP).

SOA: a protocol that sets the standard for participants of Zipper network to self-organize into multiple subsidiary chains. Through SOA, all participants can self-organize into sub-chains of appropriate scale and each sub-chain maintains a sub-ledger with Byzantine fault-tolerant consensus algorithm that can tolerate a certain number of faulty nodes or malicious nodes.

SCIP: a protocol that sets the standard for multiple homogeneous sub-chains and ledgers on Zipper to access data and execute transactions cross-chains. SCIP includes definition and collaboration logics of inter-chain transactions. Sub-chains achieve cross-chain access and transactions through SCIP, leading to high concurrency and strong scalability of Zipper.

ACIP: a protocol that sets the standard for integrating external or foreign blockchains with Zipper. ACIP includes standard data structure and processing logics of scripts or contracts. Through the same data structure and processing logics, Zipper achieves cross-chain data compatibility with heterogeneous blockchains.

## 2.2 Design for Payment Clearance and

Settlement Security

Zipper adopts a data separation and credit granting verification mechanism. To process

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a transaction on Zipper, blockchain clearance files and transaction payment data on distributed ledgers are separated. When the decentralized verifier for credit granting is calculating, only the encrypted use case for mathematical verification is visible; when the financial institution executes payment based on clearance files, details of the payment data are not required. The transaction is transmitted among the transaction participants of multiple institutions and the actual payment data is encrypted and shared among the transaction participants only.

### 2.3 Cross-Chain Gateway (CCG)

Cross-Chain Gateway (CCG) is responsible to communicate and integrate with all the external blockchains. Externally, CCG is compatible with various Private Blockchain protocols, Consortium Blockchain protocols as well as trustworthy Public Blockchains. Internally, CCG blocks the heterogeneous structural differences among all the different Private Blockchains and Consortium Blockchains. Security-wise, CCG prevents direct access of internal systems from external systems. Structure-wise, internal systems only need to integrate with CCG to use any blockchain technologies.

Zipper CCG creates a complete cross-chain gateway structure for global financial institutions to launch blockchain-based financial services. As an analogy, CCG serves as the routing protocols among the blockchains of different financial institutions, and provides communication

and data transfer across different blockchains. CCG establishes communication and interaction protocols among different blockchains, therefore heterogeneous blockchains from different institutions can connect with each other through CCG just like different devices inter-communicate on the internet. In the Zipper network, different blockchains analyze and transmit communication requests in accordance with the CCG protocols, maintaining the topological structure of a blockchain system in a dynamic way.

### 2.4 ZConnector

ZConnector maintains the connection between financial institutions and the Zipper Network and keeps its own position as well as neighborhood relationships in the blockchains. ZConnector simultaneously communicates with multiple participants in the Zipper Network via P2P Message transfer, including Transaction Messages, Query Messages and Consensus Messages. Transactions from financial institutions are submitted to Zipper via ZConnector and then written into the ledgers after consensus is reached with related participants.

### 2.5 Communication Security

Zipper supports decentralized authentication mechanisms. Nodes in the Zipper Network are able to identify IDs in a decentralized manner. Nodes communicate by adopting secure TLS connection for data

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transmission. Zipper supports multiple open-source and commercial encryption algorithms and meets the cryptologic standards in various regions, hence ensuring communications are not attacked or tapped by any intermediaries.

## 2.6 KYC (Know Your Customer) & AML (Anti-Money Laundering)

Zipper Network and protocols are compatible with financial compliance regulations among the collaborative institutions. When a user creates a ledger, the KYC obligation of the collaborating institution does not change and it should comply with AML laws and financial regulations of different regions. Banks shall use Zipper on the condition that the regulatory requirements are unchanged.

## 2.7 Contract-Based Finance Electronic Authorization (FEA)

Financial institutions have diverse applications and business scenarios. When providing comprehensive financial solutions to financial institutions, the required standard for payment pathways and clearance logics among multiple transaction participants is high. Solutions for financial institutions not only need to address the trust problems among multiple transaction participants, but also need to provide payment, bookkeeping, message, clearance, commission settlement and other services that are compatible with each individual participant's own requirement and business logics.

The contract-based FEA adopted by Zipper is customizable contract that is in digital format and combines transaction process pathways and clearance processes together. FEA serves as both bookkeeping results and clearance evidence for multiple transaction participants after consensus is reached. FEA defines the agreement for all transaction participants to execute their consensus commitment. The rights and obligations on FEA are executed by Zipper Network.

## 2.8 Auditability and Privacy Rights

For traditional Public Blockchains, contract information and entire transaction history of each address are transparent to all network. This is not compatible with practical requirements of most financial applications. By adopting the latest crypto-technologies such as zero-knowledge proof, Zipper can fully meet users' privacy protection requirements while complying with regulations and being auditable.

## 2.9 Framework to Support Businesses

Zipper supports Distributed Ledger Technology (DLT), Smart Contract (SC) and Finance Electronic Authorization (FEA), all of which jointly equips Zipper Network with the fundamental abilities to provide business services for financial institutions. On this infrastructure, financial institutions can easily migrate their traditional services onto blockchain networks in a flexible way.

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## 2.10 Automatic Clearing Chain (ACC)

Zipper ACC is similar to the automatic clearing center of the Automatic Clearing House (ACH) in the United States.

Developed based on DLT and contract-based FEA, Zipper ACC defines the business types and information format of any clearing events, which conforms with entry format of the clearing houses.

ACC processes transactions and bookkeeping on blockchains, sends clearing instructions and ledger file formats via Zipper gateways to contract-based FEA, and appoints financial clearing house for clearance. If the subject assets are purely digital assets, clearance of the digital assets can be executed directly on the blockchains. For different clearance and settlement requirements, FEA allows developers to design their own solutions based on their individual business logics.

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# Applications of Zipper



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# Applications of Zipper

With the purpose to achieve global financial interconnectivity, Zipper can serve in rich and diverse financial applications, playing major roles in fundamental cross-chain Message and Transaction Transfer services, application-level inter-bank cross-border transfer and payment, corporate remit transactions, consumer micropayment, supply chain financing, trade financing, acceptance drafts, etc.

By using Zipper, financial institutions can enjoy the following advantages

1. Lower cost for international clearance and settlement. New tools based on blockchain technologies will reform the global commercial value chain, driving down cost and increasing values.
2. Additional value from liquidity management. By adopting Zipper, financial institutions can offer their clients with more asset services, increasing values derived from liquidity management.
3. Improved efficiency on transaction processing. Zipper significantly cuts down the cost of traditional bookkeeping and account reconciliation, increasing efficiency and achieving better user experiences for transactions.

4. Intelligent finance. Cross-chain contract-based FEA (Finance Electronic Authorization) provides banks with more blockchain-based smart solutions, improving banks' abilities to solve diverse demands from their clients on transaction processing, clearance and settlement.

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# Zipper Token Distribution Plan

The background features abstract, semi-transparent blue geometric shapes. A large, solid blue rectangle is positioned in the lower right quadrant. Above it, a smaller blue triangle points upwards towards the top right. To the left of the triangle, there's a thin, elongated blue shape.

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# Zipper Token Distribution Plan

Zipper Token is the accounting unit of Zipper ledgers and the medium for value transfer on the Zipper Network. The total supply of Zipper Tokens is 100 billion.

The distribution plan is as below:

1. Jan 2018, 1st Private Placement of 15 billion Zipper Tokens, 15% of the total supply. Mainly for early investors and not open to the public;
2. Q2 2018, 2nd Private Placement of 15 billion Zipper Tokens, 15% of the total supply. Mainly for strategic institutional partners and not open to the public;
3. Zipper Tokens may list on exchanges depending on market conditions

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# Disclaimer



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# Disclaimer

This document does not constitute any investment advices. The buyer understands that digital assets, Zipper Tokens, Zipper Blockchain and other technologies are new and untested thus may be inherently risky. Zipper team will not be responsible for any non-performance resulting from adverse changes in the market forces or the technology.

In addition, the buyer has been warned of the following risks

1. Legal risks regarding securities regulations
2. Risks of unfavorable regulatory actions
3. Risks of theft and hacking
4. Risks of security weakness of codes & software
5. Weaknesses of cryptography & mining attacks
6. Risk of loss of value of Zipper Token
7. Zipper Ecosystem may not meet buyer expectation
8. Zipper Ecosystem may never be completed
9. Insufficient interest in Zipper Project and Zipper Token during Private Stage and exchange listing
10. Regulatory risks associated with Zipper Project and Zipper Token during Private Stage and exchange listing
11. Risk of proceeds use and future token allocation different from the plan

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12. Risk of Zipper Tokens not tradable on exchange market In particular, the buyer must be warned that

13. Zipper Tokens sold in the Private Stage are not refundable under any circumstances

1.4 The buyer must meet the criteria of "accredited investor" as defined under the applicable laws of the jurisdiction where the buyer resides

15. The buyer has full power and authority to enter into the terms and will not violate any applicable laws

16. Citizens and residents of Mainland China and the United States are not allowed to participate in the Zipper Token distribution

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# Team of Zipper



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# Team of Zipper



## Boris Chan

Boris Chan Mr Boris Chan was graduated from The University of Hong Kong (Undergraduate and Postgraduate). He has vast experiences in Fintech (financial technology) industry, and has been focusing at product implementation and service consultancy of Fintech intelligent and internet innovation for traditional banks and financial institutions. Moreover, he involves in large amount of Fintech upgrade tasks of China and overseas

banks.

In the past three years, Mr Boris Chan has been committed to promote Fintech upgrades to blockchain technology, and jointly advocate the R&D (research and development) of Cross Chain Message and Transaction Transfer and implementation of the related applications. Based on integration of different Fintech blockchain product applications, being complaint to financial laws and regulations of different countries, and reaching a consensus view of the industry, Mr Boris Chan jointly advocate the R&D (research and development) and implementation of global financial graded public blockchain underlying technologies.

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## Chris Ryan

Mr Chris Ryan is a Fellow of the Institute of Chartered Accountants in Australia, an Australian Financial Services Licensee and a Member of the Financial Ombudsman Service. He is an Executive Director of the Investorlink Group and has 25 years experience both internationally and domestically, in capital raising, corporate restructuring, corporate taxation and business planning.

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Mr. Chris Ryan has been lead adviser in corporate acquisitions and divestments of large national and overseas companies, and has advised on ASX listings, and has also led capital raising in the unlisted property market. He was Chairman of a ASX listed company, and currently holds directorships in several unlisted companies.

[chris.ryan@ttgfintech.hk](mailto:chris.ryan@ttgfintech.hk)



### Roger Wu

Roger Wu is CEO of Boom Fintech Inc. With 20 Years of experiences in investment and finance, Roger is the founder of several companies in the private equity, Fintech and international consulting sectors. His focus has shifted to the Fintech field in the recent years believing it is the key element to the future.

Roger Wu has dual B.A. degrees in Economics and Asian Relations from Trinity College.

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# Consultant of Zipper



A graphic design element consisting of three overlapping circles. The circles are filled with a medium blue color and have a thin, darker blue outline. They are positioned in the lower right quadrant of the page, partially overlapping each other and the teal background.

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# Consultant of Zipper



## James Lei

Dr. James Lei is a seasoned researcher, inventor, entrepreneur, and visionary leader. He is the founding R&D program director at Hong Kong Applied Science and Technology Research Institute (ASTRI) for pioneering research work in the distributed system, AI and machine learning, blockchain and DLT, cloud computing, big data, financial technologies, media, networking, software and system. He is the principal scientist and chief architect contributed to several dozen technology transfers with big commercial impact. He is the program committee member of MSc program on Financial Engineering at Chinese University of Hong Kong, teaching faculty for the course Blockchain for Financial Applications at Hong Kong University of Science & Technology, and program committee member for Financial Technologies at Hong Kong University. He has taught EBMA at CUHK, and served as MS/PhD thesis advisor for Electric and Electronics Engineering department at HKU and Information Engineering department at CUHK. He serves as the review member for Hong Kong Research Grants Council, reviewer for IEEE Communications magazine, honorary advisor for Economic and Information Bureau of Hunan Province, technology consul for Zhuzhou city, and general technology advisor for HengQin Financial Technologies Industrial Park.

Dr. Lei has held various research and management positions at Bell Labs, Lucent Technologies, Brown University Walter Hunter AI Lab, and Panasonic Research in USA. He has 120+ publications in journals, conferences, and patents. His research has led to several technology startups. He was the president of New Jersey Chinese Computer Professionals Society, the director of Chinese Association of Science & Technology, Beijing Overseas Scientific Advisory Board, the State Research Fund Industry Committee for New Jersey Center for Wireless Telecom, and the technical conference organizer and session chair. He was the cofounder of Guangzhou International High-Tech Incubation Center dedicated to the overseas Chinese scholars setting up business in China. Dr. Lei obtained Bachelor degree in Mathematics from Beijing University, MS in Applied Math and PhD in EE from Brown University.



## Fei Zhang

Ms Fei Zhang has over 15 years of experience in financial services and consulting industries. She has a strong track record of managing credit risks in both consumer and commercial lending businesses and is result oriented. Currently she is in a risk management role at Capital One. Prior to that, she was a regional risk officer at American Express managing institutional risks of corporate clients with approximately \$10 billion in annual billings. During her early career, she spent time at Accenture on various consulting projects.

Ms. Zhang has Master degree of Business Administration from Duke University and graduated with honour with a B.S. degree from Louisiana State University. She is also a Chartered Financial Analyst.



## John Xiong

Mr John Xiong graduated from Jiangxi University of Finance and Economics, Monetary Banking major. In year 2011, he has founded Fintech corporate, TTG Fintech Limited (ASX: TUP), and innovatively introduced payment path scheme design concept of bank's payment gateway routing. Moreover, he has developed and launched the World's first FEA, Financial Electronic Authentication, integrated payment and settlement processing system. The system is serving hundreds of banks globally to provide financial system development and technical support services. TTG Fintech Limited has obtained and possessed intellectual properties in different countries and regions globally, and is TOP 10 blockchain intellectual property enterprises in China.

### Social Positions:

- Current Chairman of the board and CEO of TTG Fintech Limited
- Standing Vice President of Shenzhen Electronic Commerce Association
- Vice president and Deputy Secretary General of Shenzhen Internet Technology Application Association
- Standing committee member of Shenzhen (Luohu District) science

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and Technology Association

- Expert committee of (E-commerce trusted transaction circle) of Shenzhen Institute of Standards and Technology
- Honorary chairman of Thailand Chinese Chamber of Commerce



### **J. Michael Bradley**

Mr J. Michael Bradley has 23 years of experience and strong global industry background in Electronic Payments, Risk Technologies, Technology Services and Software-as-a-Service. He is currently Chief Commercial Officer & Advisor for Fintech & SaaS ventures, including Omise (online payments and blockchain solutions provider), FitPay (payment company enabling payments on wearables and IoT devices), and EBCoin (Korean based blockchain company targeting at global tax rebate industry). Prior to his recent positions, he was Vice President & Managing Director of CyberSource (VISA, Inc. subsidiary), and was Director Global Services of CyberSource from year 2009 to 2010.

Mr J. Michael Bradley has MBA degree (McLaren Fellow Scholarship) from University of San Francisco, and BA degree (Graduate cum laude) from University of California, San Diego.



### **Kevin Piao**

Mr Kevin Piao has vast experience in banking and payment industry. He was the previous Head of Sales of FirstData China, responsible for all the sales business of payment solutions in China. Prior to his career in FirstData China, he was the Marketing & Sales Director in BOC Services Inc. (focusing on establishment and implementation of acquiring business development strategy, and in charge of product and solution development) and Project Manager of BOC Credit Card (International) Limited (focusing on the establishment and implementation of Dynamic Currency Conversion development strategy, building e-Commerce team, promoting PCI certification, and helping Internet Payment Service Providers and merchants to establish risk control system).

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# ZIPPER.IO

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2014-2018