

Lightning Network

BUSINESS PLAN

March 31, 2018

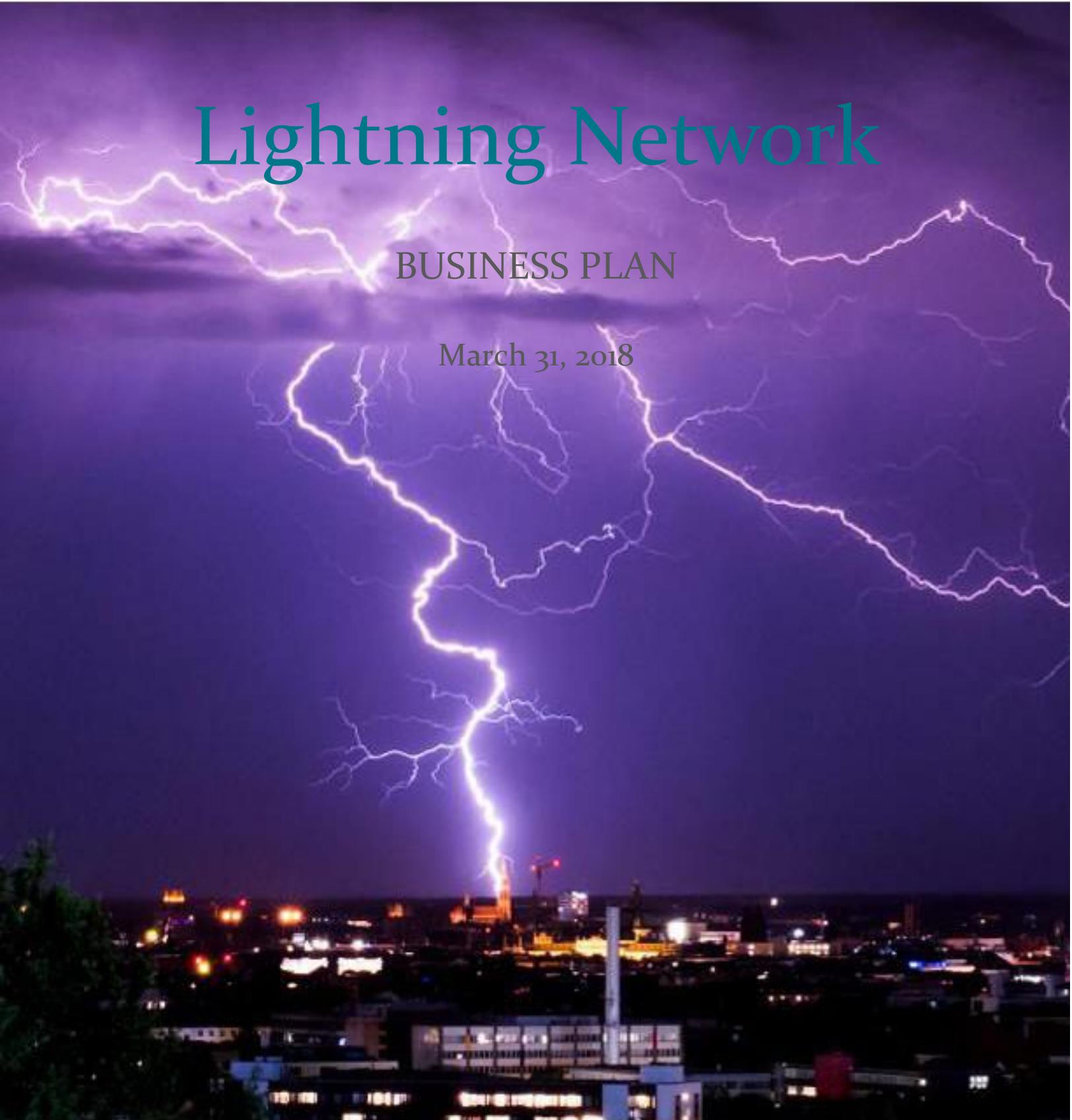


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Introduction

Year 2017 has been acclaimed as the Year of Cryptocurrency, as the price appreciation of Bitcoin to nearly \$20,000 has claimed headline titles in various news media worldwide, such as Wall Street Journal, Forbes, CNN, to name a few.

However, to this date, there is yet a cryptocurrency to claim the title of money of coffeeshops on main street. There are many reasons which prevent Bitcoin to become the main street choice of monetary instrument. Among them, the most notably reasons are:

- High transaction fees: Fees in the range of \$1~\$30 per transaction is impractical enough for anyone to just go to Starbucks and pay for a cup of coffee which only costs about \$2~\$5.
- Long waiting time for transaction confirmation: The current common practice of considering a Bitcoin transaction as complete is to wait for 6 confirmations from network, which can take anywhere between 1~2 hours.
- Low transaction volume per second: Bitcoin was designed with 1 MB block size and a new block is generated on average about every 10 minutes, which translates to about 7 transactions per second. To allow a decent world population to pay for coffee every morning, at least a few thousand transactions per second is required.

This business plan outlines a vision for a new cryptocurrency and an ecosystem capable of processing millions of transactions per second which is suitable for mass market adoption.

Launching in 2019, this new cryptocurrency will be based on multi-blockchain Proof-of-Stake system – Lightning Network – designed to host a new generation of cryptocurrencies and decentralized applications. Lightning Network employs MapReduce computing paradigm on root chain and its child chains, natively implements Plasma framework and supports the synonymous Bitcoin Lightning Network Protocol, which allows lightning fast peer to peer transactions off chain.

The protocols and other components of Lightning Network are described in detail in the Technical White Paper, with this document focuses on a general view of the proposed technology and its commercial uses.



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BACKGROUND

Bitcoin has introduced cryptocurrency and blockchain technology to financial industry, while Ethereum has proposed to build a world computer which can host a variety of unstoppable decentralized apps.

Ripple is a real-time gross settlement system (RTGS), currency exchange and remittance network created by the Ripple company. Ripple has been successfully integrated with various banks and financial institutions to allow low fee transmission of funds across borders. Stellar has been building a money transmission network based on same technology as Ripple.

While these technologies have successfully introduced cryptocurrency to the masses and have been proved to be useful in many circumstances, among them such as anonymous transmission of funds, none of them have been successfully integrated into people's everyday lives to this date. So far, the interests for Bitcoin and other altcoins are mainly from investors, which helped the dramatic value appreciation of various tokens in 2017.

PROBLEM STATEMENT

To be successfully adopted by the mass market, a new cryptocurrency and platform is needed to provide:

- Scalability: to be able to support millions of transactions per second.
- Ease of Use: as easy as click of a button or swipe of a card
- Low fees: low fees for both end users and merchants
- Wide Availability: to be able to buy many goods and services for everyday use

Lightning Network Protocol has been proposed as a solution to Bitcoin's scalability problem, however, it lacks the other 3 factors which are needed for mass market adoption. Establishing a payment channel on Bitcoin network still requires both parties to wait for network confirmations which can be anywhere between 10 minutes ~ 1 hour, and pay transactions fees of about \$1~\$30 in order to commit funds to the channel, which makes it impractical for infrequent micropayments such as buying a cup of coffee for \$2 at neighborhood coffeeshop.

Plasma Framework has been proposed to employ MapReduce computing paradigm on Plasma child chains and Proof-of-Stake algorithm to scale up Ethereum platform.



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However, the proposal is currently in ideation stage, and no practical work has been performed so far to implement the framework.

TON (Telegram Open Network) is a multi-blockchain Proof-of-Stake system proposed by Telegram and designed to host a new generation of cryptocurrencies and decentralized applications. At the core of the platform is the TON Blockchain — a scalable and flexible blockchain architecture that consists of a master chain and up to 2^{92} accompanying blockchains. TON Payments is a platform for micropayments and a micropayment channel network. It can be used for instant off-chain value transfers between users, bots, and other services. Safeguards built into the system ensure that these transfers are as secure as on-chain transactions. The TON network is currently under development and it would presumably meet the scalability and low fee requirements for mass market adoption when it's deployed in 2019. However, it has been criticized for lacking of implementation details, and there are serious doubts about its practicality considering its expansive goals and relative short development to deployment timeframe with many promised features and services such as Hypercube Routing, TON Storage, TON Proxy, TON DNS, TON-based ad exchange, to name a few.

OUTLINE OF THE VISION

With the latest development in blockchain technology, the time is ready for the mass market adoption of a new blockchain platform which meets all of the four requirements.

Our vision is to build a super blockchain platform consisting of super nodes employing MapReduce computing paradigm, which natively implements Plasma Framework and supports Lightning Network Protocol to allow transactions much faster than Visa/Mastercard and be able to encompass financial transactions of the world.

The network uses native BOLT tokens (ticker symbol: XBO) as exchange of values between parties and allow it to be adopted as the world currency in the foreseeable years.

Lightning Network can be regarded as a decentralized world supercomputer and value transfer system which can be scaled indefinitely. Its user-friendly interfaces allow easy everyday use and integration with many applications and merchant solutions.

BOLT card will be issued to end users which is compatible with Visa/Mastercard, but superior in security and transaction speed, which would allow it to overtake Visa/Mastercard and become the world's most adopted payment method.

Lightning Network is similar to TON in vision and design of architecture, however, unlike the huge undertaking of TON (blockchain & platform) which is to become the world's



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most used decentralized computing platform, Lightning Network focuses on serving both the people and the financial industry while becoming the world's dominant global payment network for everyday uses.

A BRIEF OF COMPANY HISTORY

Lightning Network LLC was founded on January 20th, 2018 to build the fastest and most widely used global payment network. It has registered with Secretary of State in Washington State on January 22nd, 2018. The company is a registered member of Washington Technology Industry Association.

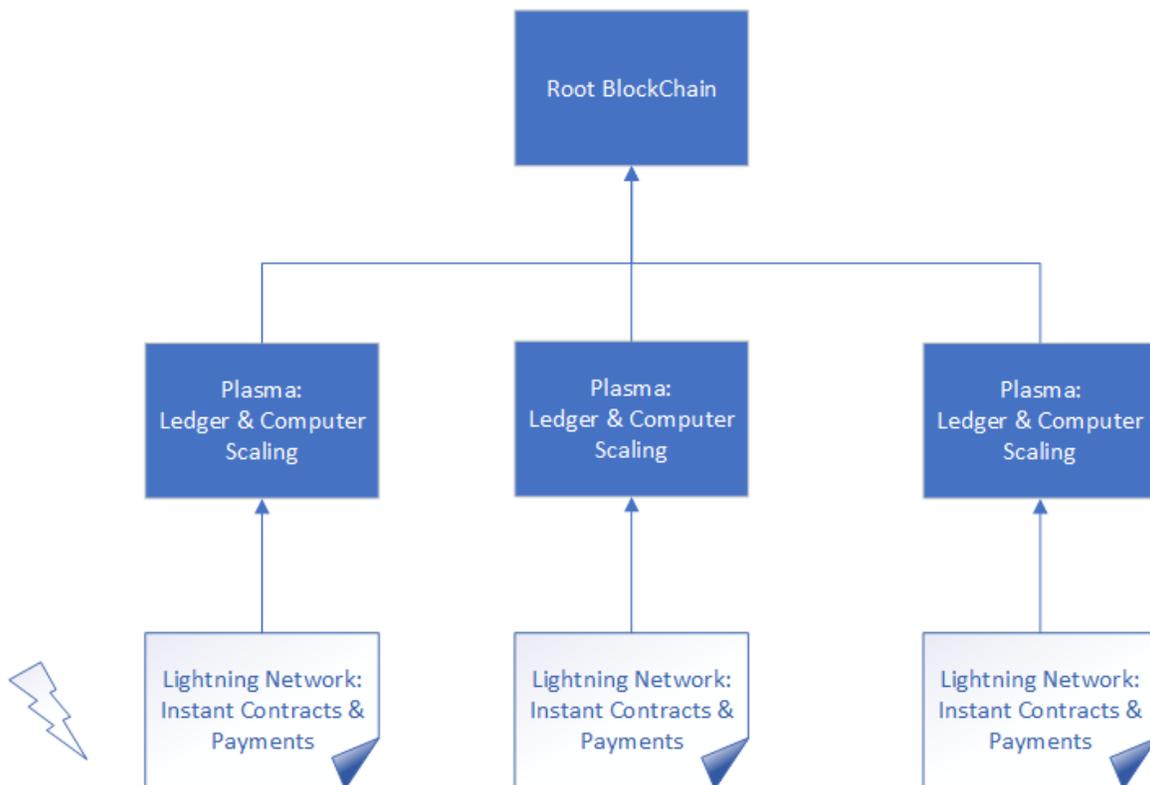
The company is currently building the network prototype and applying for SEC exemption for an ICO (Initial Coin Offering) circa October 1st 2018. A pre-ICO will be held circa June 1st 2018 to secure the funds needed for development of the network before the official ICO. After the ICO ends circa October 1st 2019, BOLT card and tokens will be available for purchase at various online exchanges and at retail locations, initially at 7-Eleven and CVS stores in United States. Institutional investors are invited to participate in early stage investment round from April 1st 2018 to May 31st 2018.

Lightning Network

To allow mass market adoption of cryptocurrencies in 2019, founder of Lightning Network LLC, Junhua Chang, has proposed to build a new blockchain platform which employs MapReduce computing paradigm and natively implements Plasma Framework with support of Lightning Network Protocol.



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LIGHTNING BLOCKCHAIN

At the core of the platform is a scalable and flexible blockchain architecture that consists of a root chain and up to 2^{92} plasma blockchains. The root chain can be Ethereum or any blockchain platform which supports Smart Contracts. Each plasma blockchain is represented by a smart contract on the root chain or parent chain, and only commits hash of plasma block header on the root chain. This allows for an incredible amount of transactions processed on plasma chain while minimum data is committed to the root chain. Users can have accounts either in root chain or plasma chain, and are free to withdraw and deposit funds at any time. Funds can be transferred between any accounts in same root or Plasma chain or across chains.

The total number of Plasma chains and their shard chains are limited to 2^{92} . This limit is practically considered to be infinite as it's more than the total number of stars in universe which is estimated at 10^{23} .



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MapReduce Computing Paradigm

The super nodes are validators in root chain which employ MapReduce computing paradigm, to allow processing of huge amount of data in parallel. Transactions inputs and outputs can be mapped to hundreds of computing nodes which the total number of nodes can be scaled to thousands or more when needed, and reducing functions will return the correct UTXO/Account balances to be used for generating of new block. The computing nodes will serve simultaneously as distributed file storage similar to HDFS & BigTable. This allows storage of nearly unlimited blocks with arbitrary block size. The system would essentially allow storage of whole world's financial transactions for unlimited time.

Due to the computing resources demanded by super nodes, it would be impractical for a single person to run an entire super node in house, however, it's entirely possible for miners to pool their computing resources into one super node, similar to Bitcoin mining pools functioning as validators nowadays.

MapReduce can also be used to construct multi-chain distributed apps, such as decentralized exchanges, where the Plasma chains will serve as computing nodes for the root chain. Entire order book across thousands of Plasma chains can be coalesced to a single order book on root chain in a reducing step, and the actual allocations of orders on the root chain can be mapped to Plasma chains which will further map to each of child chains and ultimately UTXO/Accounts. This would allow the network to be able to encompass the entire world's trading activities, with trading offs of time to scalability.

Plasma Chain

Anyone can spin up a Plasma chain and anyone can transfer tokens to anyone in other plasma chain or root chain. A bonded Smart Contract will be created on root chain or its parent chain, with its balance reflecting the combined balances of all UTXO/Accounts on Plasma chain and its child chains. The total number of Plasma chains are limited to 2^{32} , so as to allow fitting of both the Plasma chain address (4 bytes) and UTXO/Account address (20 bytes) in 256 bits.

Infinite Sharding Paradigm

Plasma chain supports sharding with each shard chain stores a range of UTXO/Account address. The total number of shard chains are limited to 2^{60} .



Proof-of-Stake Approach

To validate a block in root chain, a validator must prove that it has withhold sufficient stakes (tokens) for sufficient time. Besides the stake holding requirement, sufficient computing resources must have been deployed into computing the next block. The required computing resources include sufficient storage of all blocks, number of nodes deployed with sufficient computing power, sufficient network bandwidth, etc. The validators need to deposit tokens to validate the next block. The tokens are confiscated if fraud is detected using Byzantine Fault Tolerant protocol.

Self Healing Distributed Ledgers

Since Plasma ledgers are not stored in root chain, only hash of plasma block header is stored, mass exit of Plasma chain is allowed in case of dispute. This allows self healing of the ledgers by allowing Byzantine Plasma chains to collapse and to deter fraud.

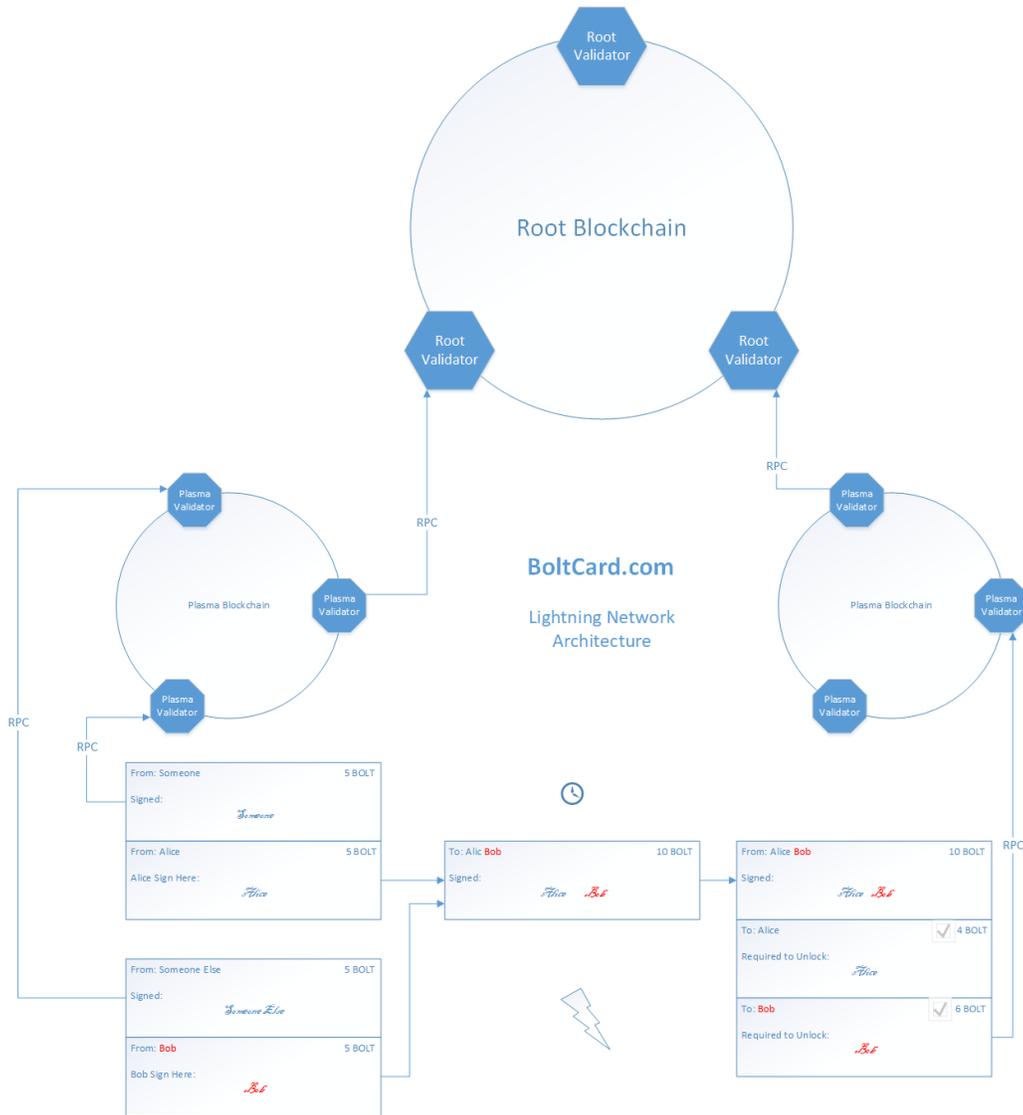
LIGHTNING PLATFORM

To become the world's most used payment platform, Lightning Platform supports both Peer to Peer micropayment channels and merchant solutions.

Lightning Payments

Lightning Payments is a platform for micropayments and micropayment channel network. It implements the synonymous Bitcoin Lightning Network Protocol to allow instant off-chain value transfer between users, machines and other services. Safeguard measures are built into the platform to ensure the transactions are as secure as on-chain transactions.



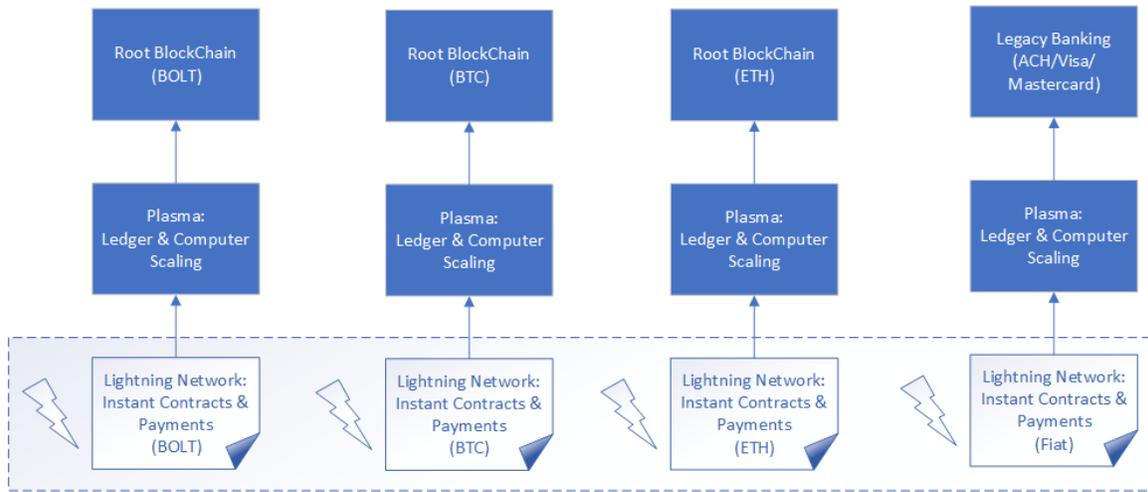


Cross Chain Swap

Lightning Platform supports Cross Chain Swap between Bolt, Bitcoin, Ethereum, Litecoin, other cryptocurrencies, and Fiat currencies.



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Developer APIs

Developer friendly APIs will be provided for easier integration of Lightning Payments into existing or new projects.

Lightning System

To enable mass market adoption, Lightning Platform provides consumers and merchants easy access to Blockchain core and further increases the potential uses of the Lightning Network infrastructure. All services can be integrated with third-party e-commerce, messaging and social networking applications, uniting the centralized and decentralized worlds and providing a ubiquitous ecosystem for BOLT cryptocurrency to be widely adopted as world currency.

LIGHTNING WALLET

Lightning Network supports light clients which can run on mobile devices and web pages without consuming significant resources. Lightning wallets store password protected encryption keys which allow the user to securely store funds on Lightning Network blockchain.



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The coins exchanged by Lightning Network users are BOLT tokens and denoted by the ₮ symbol, and by XBO ticker symbol in exchanges. The BOLT will serve as the principal currency of Lightning Network and can be exchanged for goods and services at participating merchants.

ECOSYSTEM

An ecosystem composed of online exchanges, banks, debit/credit card providers, retailers and merchants will allow users to easily buy BOLT coins and spend them on various goods and services, driving the demand for and price of the cryptocurrency. In the future, BOLT cryptocurrency can be adopted as world currency and serve as the reserve currency for multiple economic bodies and trading parties.

Exchanges

Bolt coins can be exchanged for fiat currency and other cryptocurrencies on various online exchanges.

Banks

Banks can leverage Lightning Platform to provide many financial services, including virtually free instant transfer of funds, free checking, savings, and merchant accounts etc. In the future, Lightning Network plan to form partnerships with existing banks and financial institutions to found Lightning Bank, which will be the world's first cryptocurrency bank, with services such as free checking, savings accounts denoted in Bolt coins, and Bolt debit cards linked to checking accounts for online and PoS (point-of-sale) payments.

Bolt Card

Bolt card is EMV compatible smart card, which can be used either by swiping or inserting into chip readers. Contactless chip readers are supported as well. BOLT coins can be either spent directly if the merchant accepts the cryptocurrency, or automatically converted to fiat currencies accepted by the merchants without the user paying any foreign exchange fees.



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Retailers

Bolt cards can be bought at retailers worldwide, initially at 7-Eleven, CVS and other retailers in US. Users can load cash into Bolt cards at the retailers, or buy BOLT coins at online exchanges and transfer to Bolt cards.

Merchant Solutions

Merchants can process Bolt card transactions if they are already accepting Visa/Mastercard. Merchants can opt in Lightning Network to process Bolt card transactions natively and accept BOLT coins directly with very low transaction fees.

Uses of BOLT as a Cryptocurrency

BOLT stands for **B**asic **O**nLine **T**ransfer.

Bolt coins can be used for exchange of goods and services, and also they may be used for:

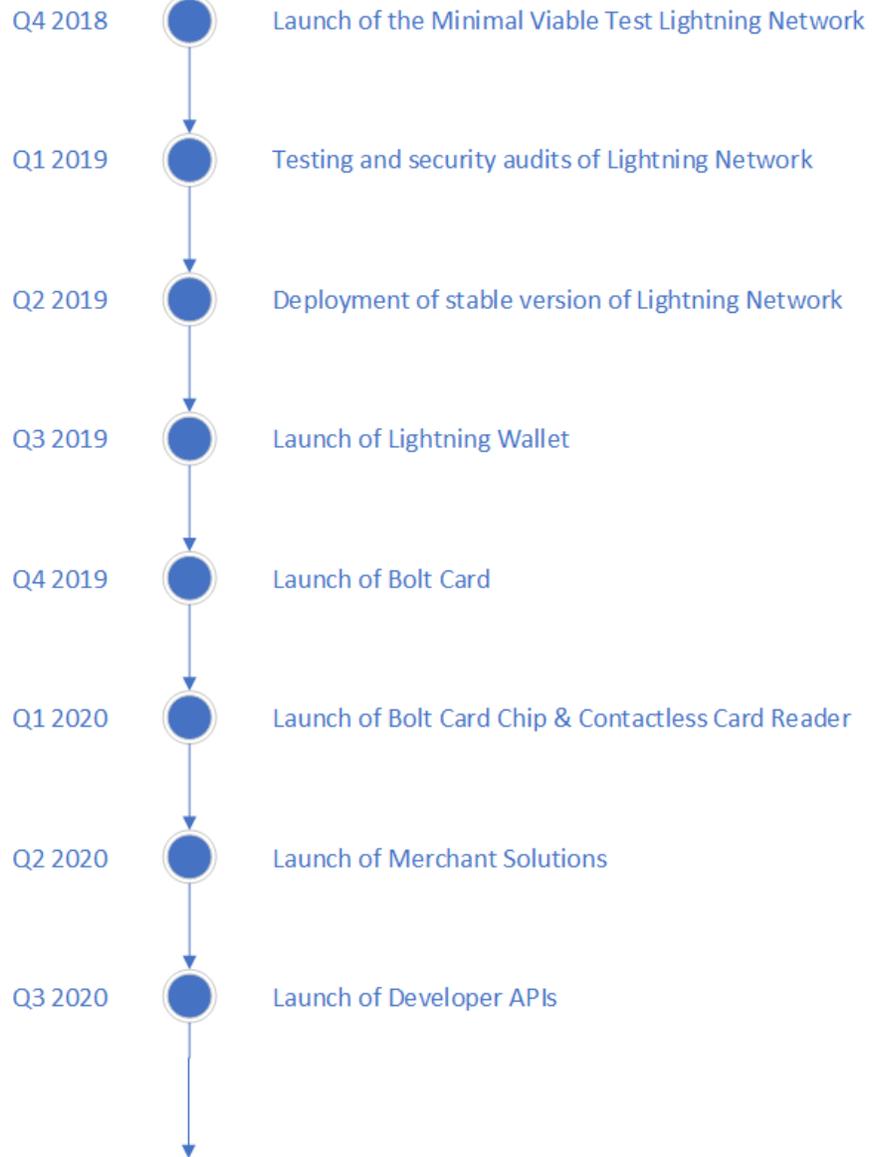
- Commissions (*gas*) paid to Lightning Network nodes (*validators*) for processing transactions and smart contracts
- Stakes deposited by validators to be eligible to validate transactions and generate new blocks and coins

Roadmap

Lightning Network roadmap includes the following milestones:



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Token Distribution

To secure the funds required to develop and deploy Lightning Network and its ecosystem, Lightning Network LLC is launching a token sale starting in Q2 2018. Investors will be able to invest using both cryptocurrencies and fiat currencies and receive BOLT tokens after the stable version of Lightning Network has been deployed.



The total supply of native BOLT tokens (XBO) will equal 100 trillion.

TOKEN DISTRIBUTION PLAN

Forty percent of the supply (40 trillion Bolt) will be retained by the company as a reserve to prevent market fluctuation and maintain flexibility at early stages.

Twenty percent of the supply (20 trillion Bolt) will be issued to the Founders.

Four percent of the supply (4 trillion Bolt) will be issued to the development team with a 4 year vesting period.

Five percent of the supply (5 trillion Bolt) will be issued to early stage institutional investors.

Four percent of the supply (4 trillion Bolt) will be issued to public investors during Pre ICO.

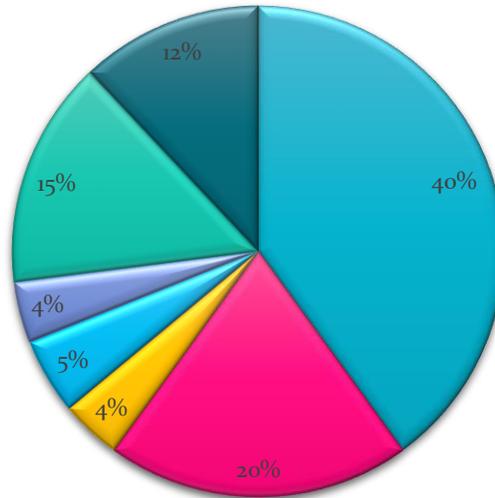
Fifteen percent of the supply (15 trillion Bolt) will be issued to public investors during ICO.

Twelve percent of the supply (12 trillion Bolt) will be issued to public investors post ICO.



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BOLT Token Distribution



TOKEN SALE PRICES

BOLT tokens will be sold to public investors at online exchanges and retail locations for USD \$1/1,000Bolt when Lightning Network officially launches. A preliminary public sale date has been planned on October 1st, 2019. This is an ongoing sale with no ending date and no minimum investment amount. Total of \$12 billion will be raised if the initially offered 12 trillion BOLT tokens are sold out, upon which time more tokens will be provided at exchange market rate from the reserve.

BOLT tokens will be sold at ICO (Initial Coin Offering) for USD \$1/1,000Bolt. A 50% bonus will be applied when ICO starts, and will be slashed to 0% when ICO ends. Minimum investment amount for ICO is USD \$1,000. A preliminary ICO date has been planned from October 1st, 2018 ~ September 30th, 2019. Total of 15 trillion Bolt tokens will be offered for sale in ICO. Total of \$10 billion will be raised if the tokens are sold out.

A Pre ICO will take place before the official ICO to build the momentum and raise the funds to build the network. BOLT tokens will be sold at Pre ICO for USD \$1/1,000Bolt with 100% bonus. Minimum investment amount for Pre ICO is USD \$10,000. A preliminary Pre ICO date has been planned from June 1st, 2018 ~ August 31st, 2018. Total of 4 trillion Bolt



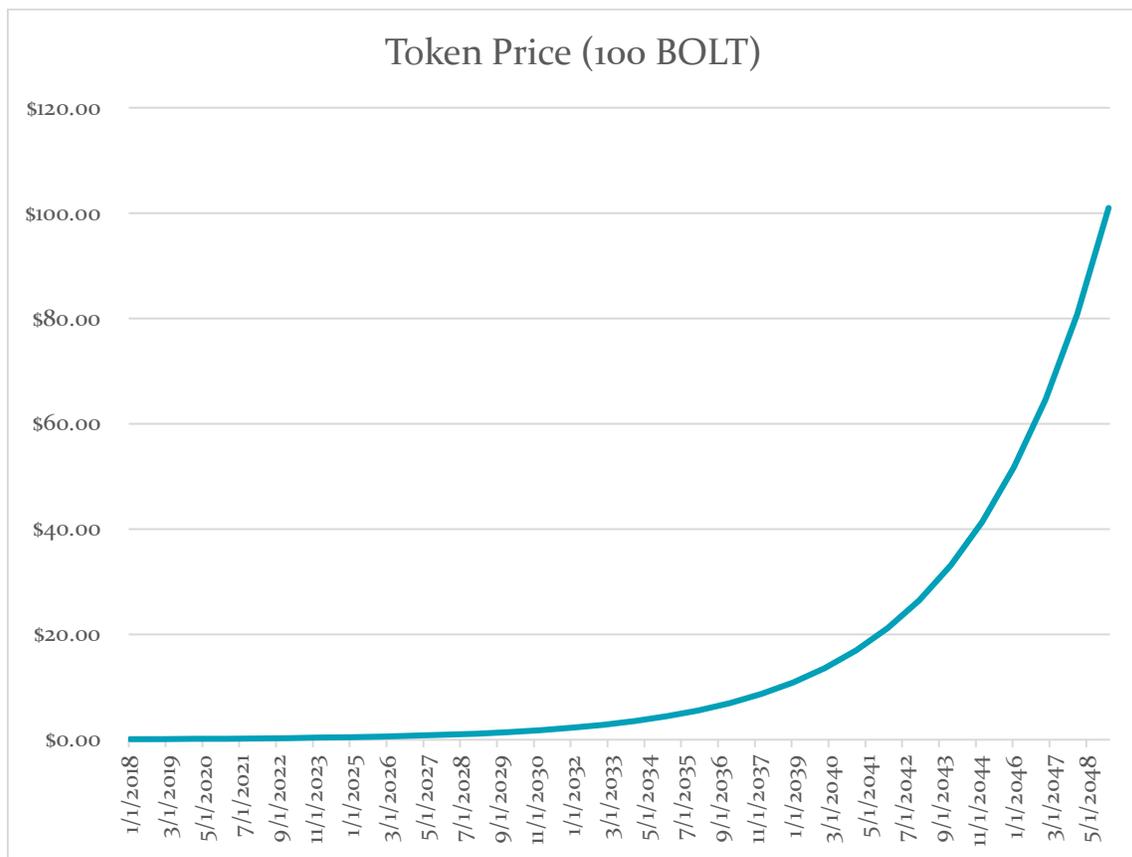
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tokens will be offered for sale in Pre ICO. Total of \$2 billion will be raised if the tokens are sold out.

A bulk sale to institutional investors will take place before Pre ICO to raise funds during early stage of development. BOLT tokens will be sold for USD \$1/1,000Bolt with 150% bonus. Minimum bulk sale investment amount is USD \$100,000. The bulk sale has been planned from April 1st, 2018 ~ May 31st, 2018. Total of 5 trillion BOLT tokens will be offered for sale. Total of \$2 billion will be raised if the tokens are sold out.

PROJECTED TOKEN PRICES

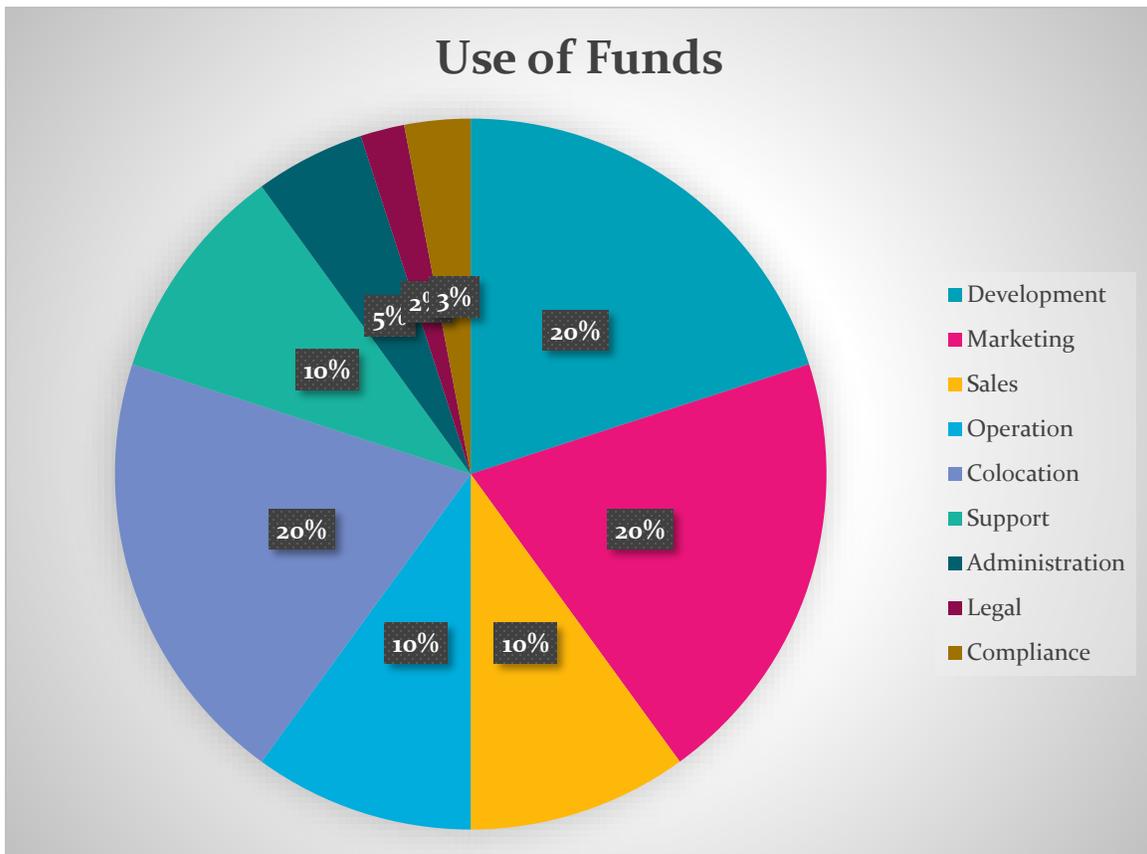
The annual inflation rate of Bolt token is projected at twenty five percent. The projected BOLT token price will reach \$0.01/Bolt in approximately 10 years, reach \$0.1/Bolt in approximately 20 years, and reach \$1/Bolt in approximately 30 years. However, depending on the rate of market penetration and other factors such as government policies, investor sentiments and economy circles, the token price could fluctuate well above or below its target price on any given date.



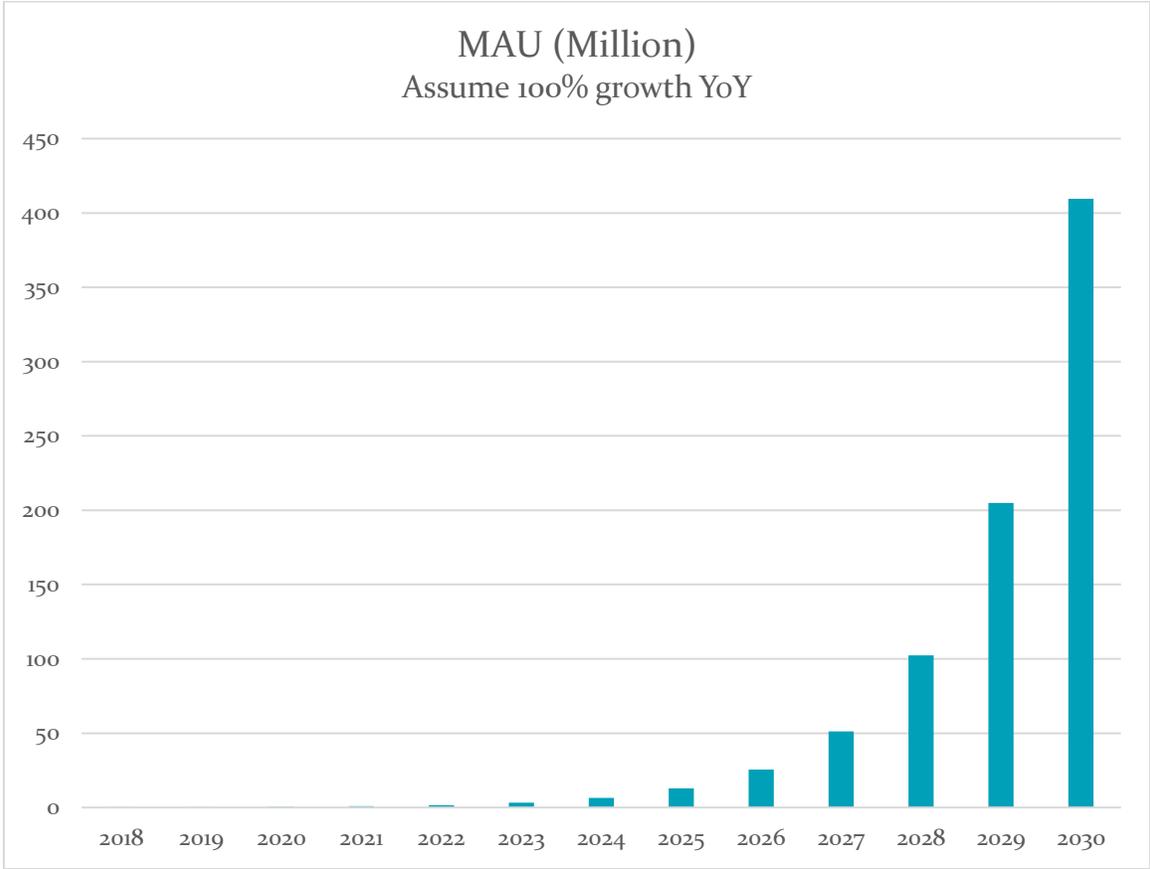
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Use of Funds

Funds raised during Lightning Network ICO will be used to support the development, deployment, operation, marketing and sales of the platform and its ecosystem.

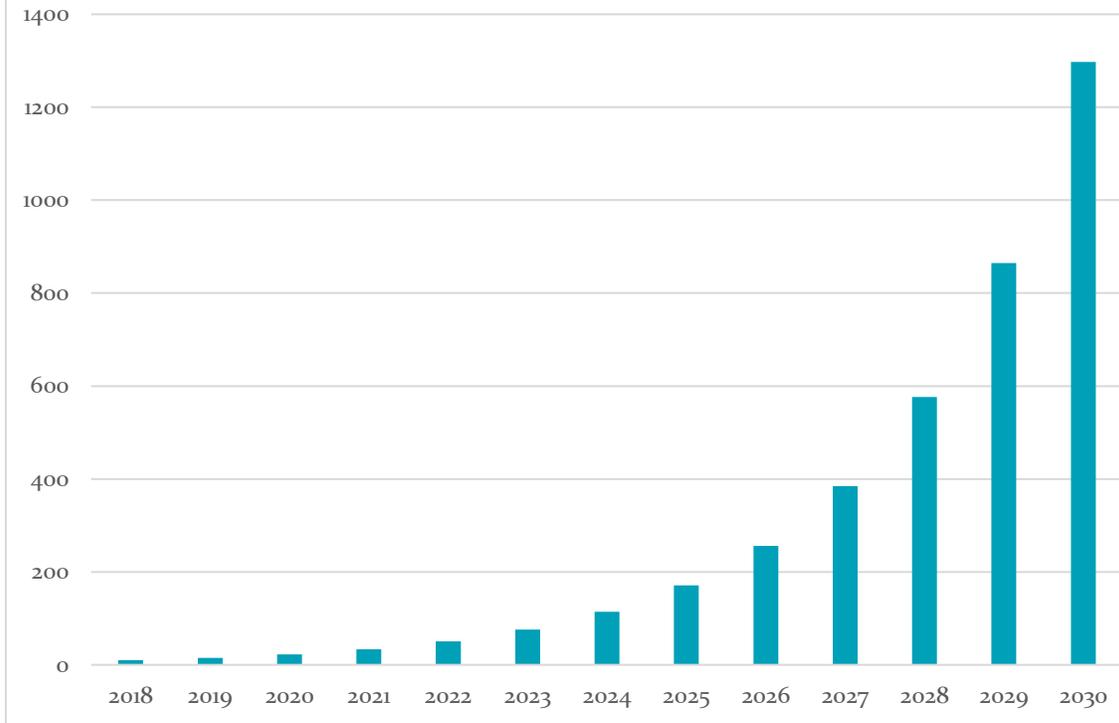


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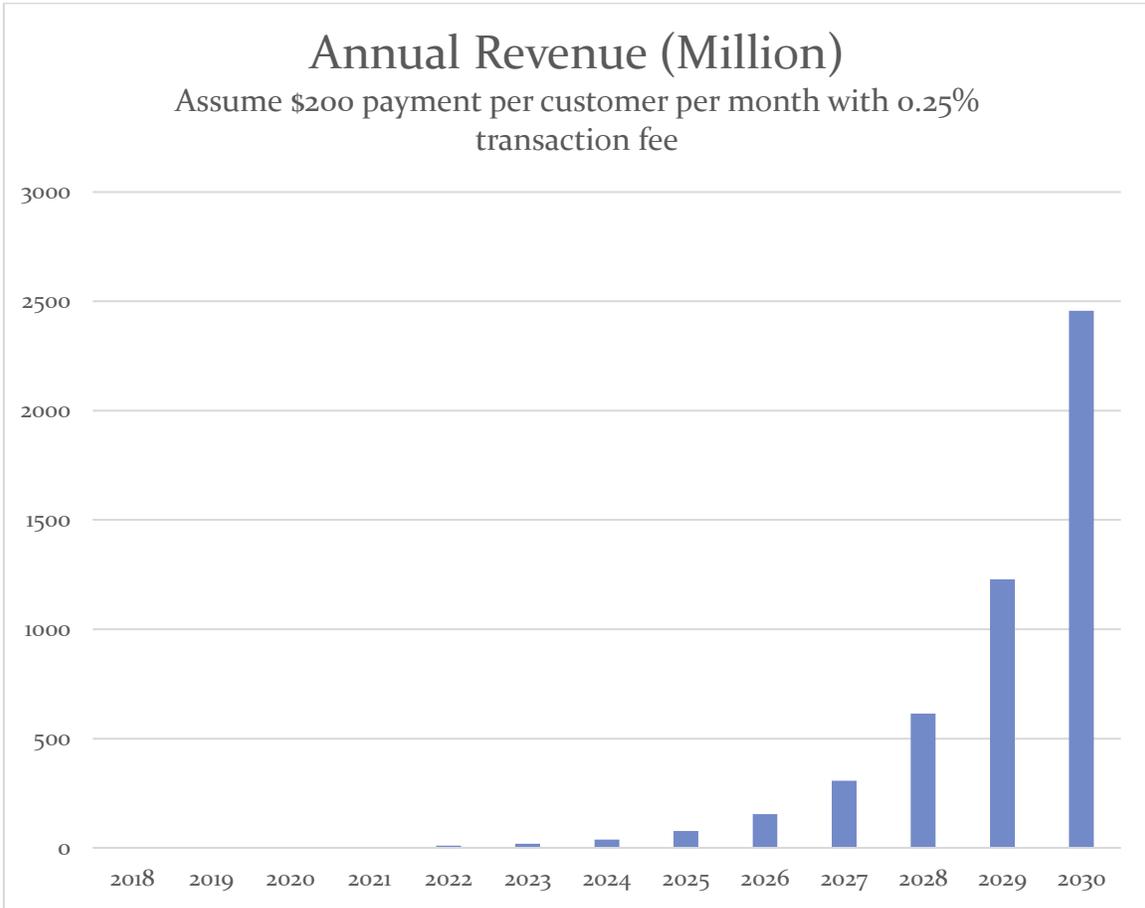


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Annual Budget (Million) Assume 50% growth YoY



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Governance

The founders of Lightning Network LLC will be responsible for the efficient use of funds resulting from any sale of tokens from the Lightning Network reserve. Over time, the corporate structure may change with onboarding of additional investors, partners and corporate officers. The company is dedicated to developing and promoting of Lightning Network and its ecosystem as the dominant global payment network.



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Team

Lightning Network LLC has a stellar team of veterans in distributed systems and financial industry. The founders and the team have designed and delivered many world class products and services, positively impacting millions of customers worldwide.

FOUNDER



Junhua Chang

M.S., Computer Science, SUNY Polytechnic

2018-Present: CEO, Founder of Lightning Network LLC. Responsible for the design and prototyping of multi-chain blockchain platform.

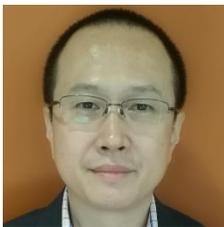
2017-2018: Principal Engineer at Handle Financial. Responsible for the design & delivery of virtual banking and bill payment system for Prism Money.

2016-2017: Principal Architect at Zonar Systems. Responsible for the design & delivery of cloud services for transportation industry, serving over 50% of all US school districts.



<https://www.linkedin.com/in/junhuachang/>

NOTABLE TEAM MEMBERS



Frank Yang

M.S., Telecom, SUNY Polytechnic

2018-Present: CMO. Responsible for sales, marketing & communications of Lightning Network.

2012-2018: GM at Beijing DXB Technology Corp. Ltd. Deployed first China public locker network in Beijing.

2002-2012: Carrier Manager at China Telecom. Responsible for Carrier business management.



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Min Guo

M.S., Computer Science, SUNY Polytechnic

2018-Present: CIO. Responsible for Information Infrastructure of Lightning Network.

2014-2018: Business Support at Asset Management Department of JPMorgan Chase & Co. Responsible for providing first point of support for Front office and Middle Office on production and business related issues and requests.

2008-2014: Production Support Specialist at Citigroup. Responsible for providing second point of contact to resolve all problems and answer functional questions.



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Yingqiong Gu

PhD, University of Notre Dame

2018-Present: Senior Software Engineer. Responsible for development of Lightning Network platform & services.

2015-2018: Software Architect at Sears Home Services. Responsible for web services improving the Sears Machine learning experience.

2013-2015: Software Engineer at Ebay. Responsible for development of Front end and Back end of shopping cart.



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