JOYSO WHITEPAPER

Hybrid Decentralized Token Exchange

2018.4.13 V1.20 draft

Modified Log

Item	Original	Modified	Page	Item
1	ICO event commences about March 1, 2018 08:00 (UTC+0) ICO ends about March 21, 2018 08:00 (UTC+0)	ICO event commences about March 1, 2018 08:00 (UTC+0) ICO ends about March 22, 2018 08:00 (UTC+0)	P.35	V1.17
2.		Add 2 advisors Bret Treasure and Ben Hsieh	P.32	V1.17
3.		Add a partner NTT Data	P.33	V1.17
4.		Add: JOY token repurchasing and reward plan	p.23	V1.18
5.	Update: Once 100 million tokens are burned, we will reward ETH to all investors that are holding more than 1000 JOY.	Update: Once 100 million tokens are burned, we will reward ETH to all investors that are holding more than specific ratio of JOY.	P.23	V1.19
6.	Update: The token holder will have the right to vote on various governance and operational issues raised by JOYSO. This may include voting on which tokens are listed on the exchange.	Update: Token holders will have the right to participate in various campaign activities hosted by JOYSO. This may include discussions regarding which tokens shall be listed on the exchange.	P.11	V1.20
7.	Delete: Once 100 million tokens are burned, we will reward ETH to all investors that are holding more than specific ratio of JOY. The total reward will equal to 20% of the trading fees minus operating expense during that quarter.		P.23	V1.20

Contents

Executive Summary

JOYSO suggests a hybrid design for token trading, combining the advantages of a centralized exchange - fast and fully-featured - with the advantages of a decentralized exchange - improved security and privacy.

This hybrid exchange (HEX), able to handle all ERC20-compatible tokens, eliminates the need to trust a central exchange with your private key or personal information, reducing to a historical minimum any opportunities for hacking. It takes order placement and order matching off-chain, substantially improving the user experience compared to decentralized exchanges. In brief, the benefits and innovations of the JOYSO model are these:

- All orders are limit orders, giving users the best possible price.
- Smart matching is done off-chain, providing fast processing and one-to-many matches.
- Smart matching eliminates security issues like front-running and makes arbitrage by the exchange transparent.
- One-to-many matches merge multiple orders into one transaction, so gas fees are substantially lower than in first generation decentralized exchanges.
- The exchange cannot alter the balance in a user's account, and has no access to the user's assets.
- Users do not need to log on to a website; they just sign the bid or ask using their own wallet and send ether directly to the smart contract.
- Users have the ability to cancel transactions up until they are matched and can even lock the smart contract themselves.
- Completed trades are published on the blockchain in a transparent, traceable way.

Compared to its competition, JOYSO has a low cost structure and offers users lower transaction and settlement costs.

The marketing strategy includes aggressive pricing (including free listing for ICOs) and professional, targeted digital marketing. The development team comprises eleven people and is based in Taiwan. It has deep connections with the Chinese-speaking Bitcoin and Ethereum communities.

Wallet support currently exists for Metamask and Ledger Nano S. The project is currently in alpha and a beta release is scheduled for June 2018. Proof of concept has been done on all principal functions and the team is ready to migrate the system to the Ethereum testnet. Margin trading and cross-exchange are part of the second phase launch.

200 million JOY tokens will be issued in total; 100 million of them in an ICO event commencing March 1st, 2018.

CEX, DEX and HEX

Although efficient and fast, the centralized exchange(CEX) is intrinsically vulnerable to hacking, denial of service attacks and fraudulent management. Losses to investors and companies amount to around a billion U.S. dollars in 2017 alone.

The risks of centrally controlled exchanges are not going away and movement towards the decentralization of trading is inexorable.

However, prototype decentralized exchanges (DEX) have so far not delivered a satisfactory user experience, for three reasons.

The feature set of DEX has not matched that of established CEX. For example, limit orders are generally not supported.

Secondly, the blockchain is an inefficient architecture for the rapid, iterative processes required by a trading environment - cancellations, price queries, multiple bids and asks, etc.

Blockchains independently verify and process every transaction in every distributed node of the network which causes slow processing times. That latency is not just an inconvenience, it introduces opportunities for market manipulation by miners, exchanges and traders.

Thirdly, conducting all trading interactions on the blockchain is excessively expensive in terms of transaction fees. Every order, modification and cancellation incurs gas fees. For these reasons - it's clear to most informed observers that a hybrid solution is the way forward.

An optimal HEX design would be a decentralized architecture in which users control funds and a centralized database that dynamically matches market transactions. Only when a deal is done and tokens are confirmed available, would the transaction be published on the blockchain. Users would not relinquish control of their assets and would

have the benefit of a dynamic market where trades are processed sequentially, in near real-time.

When trades are broadcast to the Ethereum blockchain they would be transparent and traceable, making market manipulation by the exchange much easier to detect than is the case with CEX.

Rather than an on-chain order book, which is slow and incurs substantial gas fees, a HEX would centralize matching. Automated matching of orders is common in centralized exchanges but is not practical in an on-chain environment.

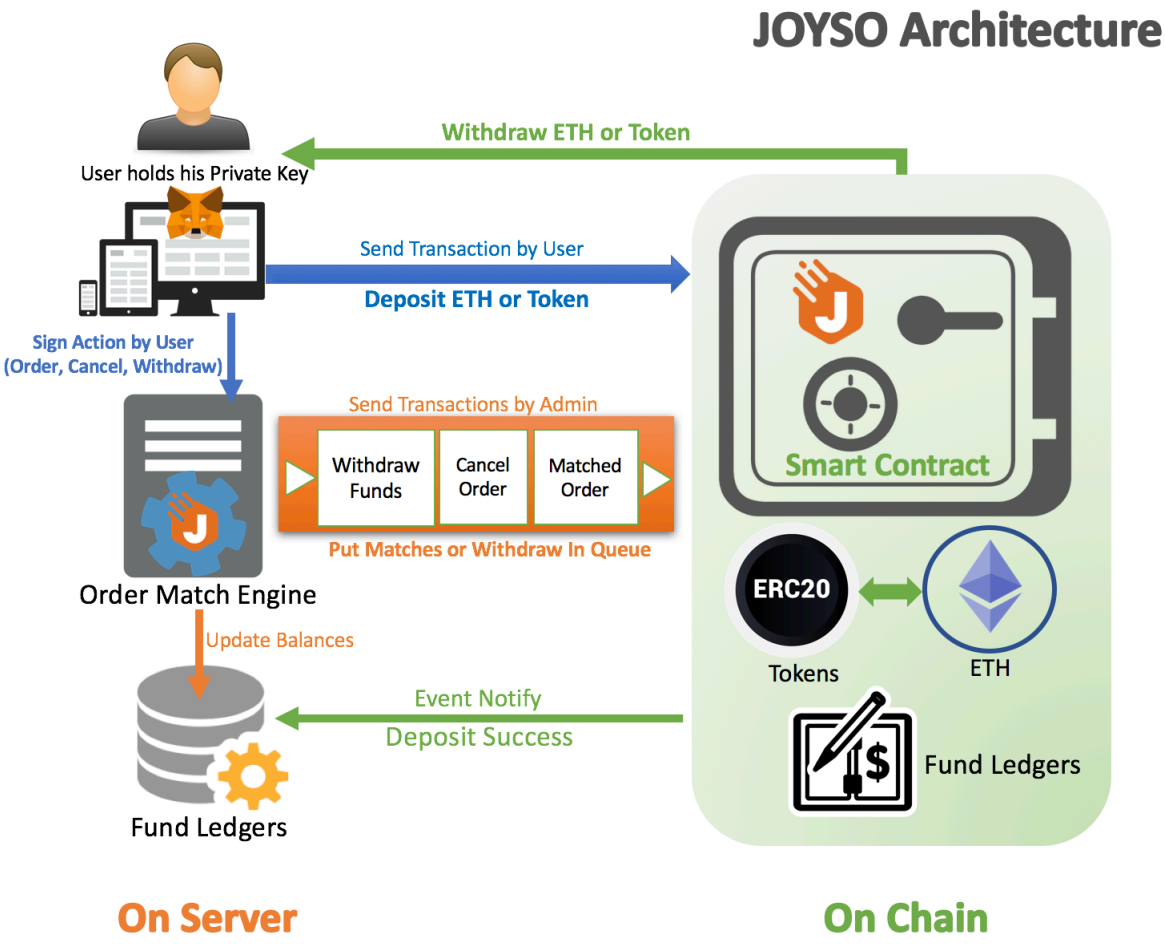
The HEX would then be able to replicate the feature set of large centralized exchanges. For example, it would permit a single order to have multiple executions - multiple buy or sell orders in a single trade. The unfulfilled portion of an order would automatically be re-categorized as a new, smaller orde. In addition to the efficiency dividend, this would lessen the impact of exchanges and large ICOs on overall network performance.

Due to its distributed nature, HEX does not require a customer to log in, supply any customer details or temporarily surrender title to a deposited sum of money. In a HEX, ownership passes directly to the purchaser. The exchange facilitates a transaction but has no title or access to the tokens being exchanged.

Settlement can then be done on-chain with smart contracts that cannot be altered or interfered with. The smart contracts act as a verifiable, open source trust engine.

This is the system that JOYSO has developed and is bringing to the Ethereum blockchain.

JOYSO architecture



JOYSO Architecture

JOYSO is a hybrid architecture which combines the transaction speed of off-chain order matching (as used in a centralized design) with the privacy and security of smart contracts in a decentralized design.

All JOYSO orders are limit orders; i.e. an order to buy or sell a stock at a specific price or better.

There are three main processes:

1. A trader sends instructions to JOYSO (deposit, order, cancel, etc) using a web interface and cryptographically signs it. They send tokens from their wallet directly to the smart contract.

2. The matching of orders is done off-chain by the JOYSO Order Match Engine . One-to-many matches ensures purchasers get the best price possible.

Matching takes place on JOYSO servers and are visible on the browser in real time. Orders are processed on a first-in, first out basis and matched orders are broadcast in sequence on the Ethereum blockchain. The matching algorithm is not open source code, akin to centralized exchanges. However, if JOYSO were to manipulate the sequence of the broadcast in order to conduct arbitrage for its own benefit, the changed order would be visible on the web site, revealing the manipulation.

3. The smart contract verifies the user signatures and publishes the transaction on the blockchain.
Until the match is made, users have the ability to lock the smart contract and request a transaction cancellation. Later, they can withdraw funds directly if necessary.

JOYSO Administration can't modify the content of the smart contract once the transaction is published, so have no access to the user's assets. Since users have signed the transactions themselves, and the blockchain is an open ledger, all trades are transparent and traceable.

No-one can alter the user's balance in a JOYSO contract without the user's signature. And the smart contracts, which are open source, can not publish a trade to the blockchain unless it contains the private key of the JOYSO Admin.

The smart contact that sends the transaction acts as the 'trust machine', replacing the audit normally done by a centralized exchange with a transaction verifiable on etherscan and with open source code posted on Github..

Here's an example.

Michael Maker wants to buy some Token X and wants to pay for them with Token Y. Tina Taker has some Token X she's interested to sell.

1. Michael does not have to set up an account. He creates an order, signs it with MetaMask or Ledger Nano S and sends it to JOYSO, depositing Y tokens into the JOYSO smart contract. Once the token asset is verified, the order is added to the database, waiting to be matched by the Order Match Engine. As soon as the order is recorded, Michael is at liberty to make another, as all orders are processed sequentially. He could also place combined multiple buy/sell orders in a single order.

2. Tina Taker sees the order on the exchange and wants to trade. She sends signed instructions to JOYSO through the web interface (she also does not need to register) and deposits tokens.

3. When JOYSO receives her instructions, token assets are again verified, the two orders are matched, and both users are informed. The database is updated.

4. Users don't need to wait for the transactions to be confirmed; they can continue trading on JOYSO.

5. JOYSO sends the matched transaction to the blockchain and both users wait for blockchain confirmation. The order is settled and tokens can be withdrawn.

If Tina's offer was for more Token X than Michael wanted to buy, the smart contract would automatically register a new order for the remaining amount of her ask in the Order Match Engine.

Smart matching

Compared to the one-to-one matching of orders used in most decentralized exchanges, users will prefer JOYSO smart matching.

Tina has placed an order. She wants to sell her 100 Y tokens and seeks 10 X tokens in exchange. If there are matching orders in the system, she may not have to spend all of her 100 tokens. Smart matching will connect her with the best offer listed for 10 X tokens. In a one-to-one system she could be matched with any person wanting 100 Y tokens.

If the JOYSO database contains no matching order, Tina's sell order for 100 Y tokens automatically becomes an open buy order for 10 X tokens and has the possibility of earning over 100 Y tokens in a future trade.

The smart contract enforces rules that deliver results as good or better than what the user has requested.

JOY Token

It is planned that 200 million JOY tokens will be generated and distributed as follows:

50% Crowdsale ICO

25% Private placement

25% JOYSO team

Using the JOY token will entitle users to a 50% transaction fee discount. The discount does not apply to gas fees.

Token holders will have the right to participate in various campaign activities hosted by JOYSO. This may include discussions regarding which tokens shall be listed on the exchange.

Advertisers can also use the token to earn discounts. Other benefits for using JOY will be announced in time.

See the Token Sale section for sale specifics.

The ICO market

Over $7B has been raised in the ICO process in the last nine months. At the time of writing each month sees another $1.3B raised, far ahead of the $300M a month attributed to angel and seed-stage venture capital.

Ethereum transactions per day now exceed Bitcoin's. Although scaling challenges remain, the demand for ICOs on the Ethereum blockchain will continue to be strong.

During this period of intense growth in ICOs, startup companies face sharp hikes in listing costs. What used to cost 3 bitcoins now costs many times that.

We have an opportunity to engage with and support the ICO market while also expanding JOYSO's reach. Our plan is to list new ERC20 tokens without listing fees.

Supporting new startups builds their liquidity, the liquidity of the exchange and our exposure to new traders. Attracting companies at this stage of their trading history is sensible, since post-ICO, tokens are available in most exchanges.

Customers who have a smooth experience trading through JOYSO will become repeat customers, particularly in the present situation, where ICOs in general and decentralized exchanges in particular are delivering such poor user experiences.

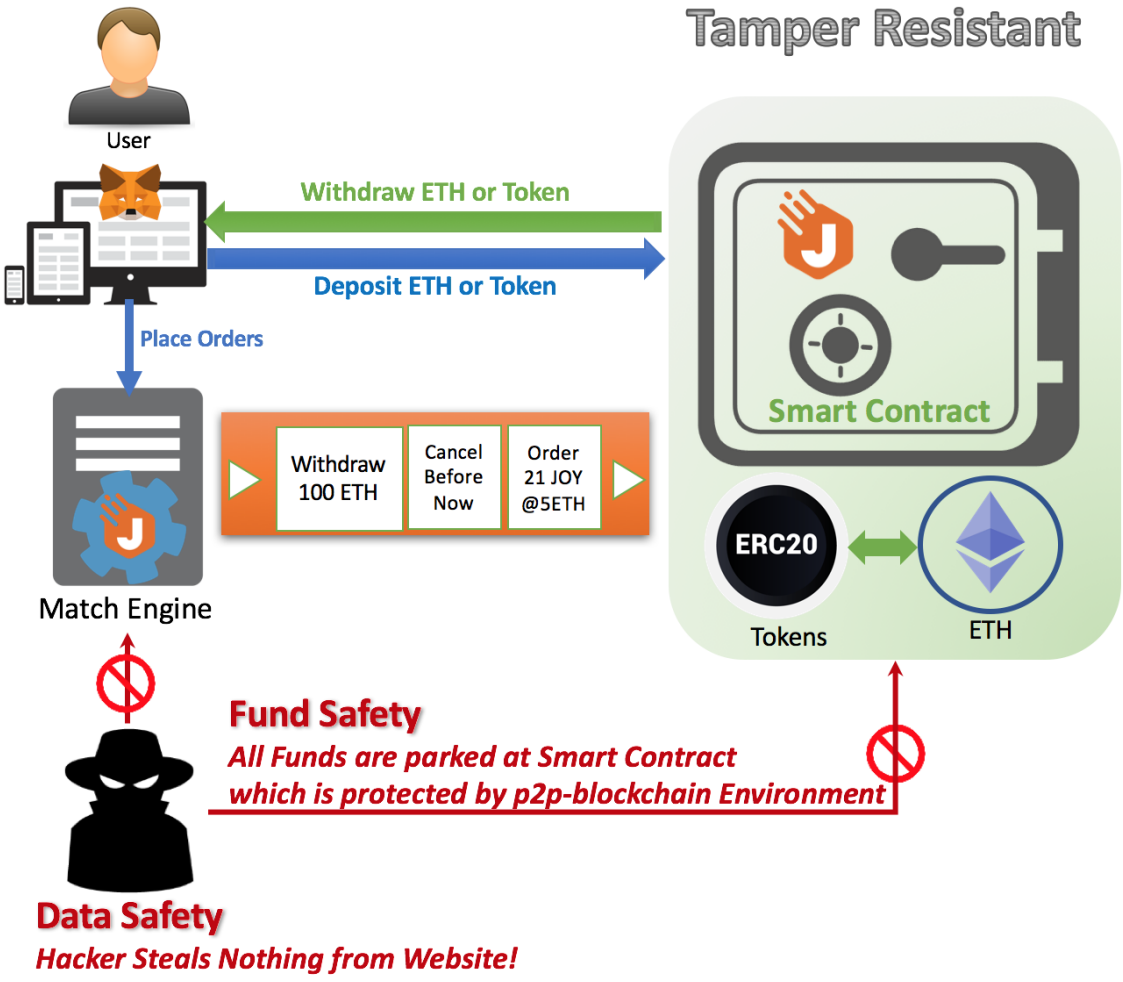
JOYSO can make this process very simple for ICOs. The applicant fills out a web form, JOYSO Admin validates the solitariness and when the token move restrictions are lifted, the tokens are unlocked, listed and tradable.

Post-ICO, we will work towards supporting non-ERC20 tokens and cross-exchange trading.

Security issues

Decentralized and hybrid exchanges must rely on secure wallets to ensure safe digital signing of their clients' instructions. Initially, JOYSO will support MetaMask and Ledger Nano S; two wallets used widely and well-regarded in the crypto community.

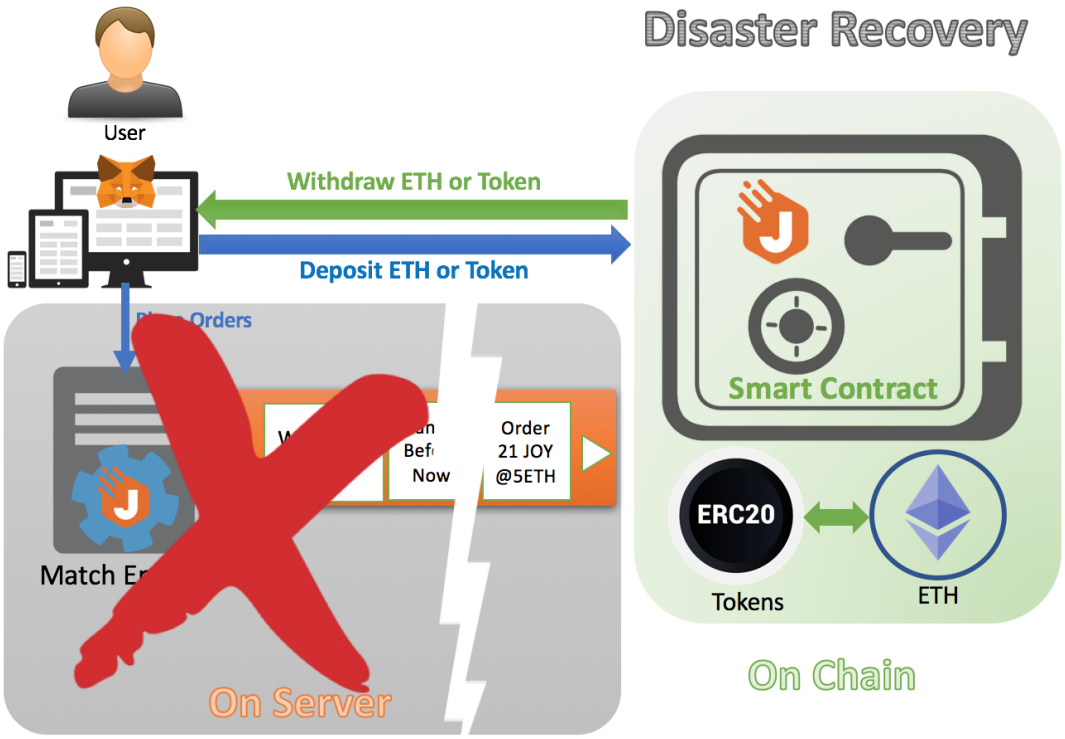
Once the order is signed, it is sent to the Order Matching Engine. Then the JOYSO Admin will send the matched order to the smart contract, to verify the order and settle funds.



Tamper Resistance

Even if a hacker gained control of the JOYSO website, without the private key of the JOYSO Admin, the smart contract would not execute. The contract would detect an unverified admin account and the fraudulent transaction would fail.

In the event of the JOYSO Admin account private key being stolen, control can be quickly regained with multi-signature authorizations.



Even if the disaster occurs on server,
User still Can Withdraw from Smart Contract Directly

Disaster Recovery

A user can cancel orders he has previously signed with the assistance of JOYSO Administration. If the problem was with the JOYSO server, the user could lock his account for a period of time, then withdraw funds directly from the smart contract without JOYSO administrative involvement.

Security

The balance of this section looks at the JOYSO architecture with respect to security threats.

1. JOYSO token contract

The token follows closely the ERC20 token standard and uses code based on OpenZeppelin, with these amendments:

A lock has been added to prevent malevolent token transfer. An unlock call is required from the contract owner to transfer the locked token.

The owner will initially be set to JOYSOWallet during the distribution of pre-sale tokens. Then manually, with the multiSig wallet, the owner will be changed to the ICO contract.

Now the tokens can only be distributed as specified in the contract's code. Once the ICO has ended, the contract will call the unlock function to release the token to the user.

The lock can only be set to unlock once; it cannot be reset to 'lock'. No outside calls are permitted in the token contract, so the possibility of a reentrancy attack does not arise. The unlock function can be called by any user and is not derived from library code so additional testing is required.

2. Crowdsale contract

This is based on the OpenZeppelin crowdsale contract.

A release function is able to unlock the JOY token contract. This function can be called by JOYSO Admin after the ICO has ended. If for some reason Administration does not trigger the release, the system allows for any other user to do so after a few days.

The funds will be sent directly to JOYSOWallet, so no ether can be locked in the contract.

The outside calls are (a) the unlock function and (b) transfer ether to JOYSOWallet. Both addresses are controlled by JOYSO, so again, no possibility of a reentrancy attack.

3. JOYSO contract

This is more complex than average contracts so we will have it independently audited until we are satisfied it is reliable.

We also plan multiple scenario unit tests and function tests to give the broadest possible test coverage.

JOYSO uses the library provided by OpenZeppelin; related libraries include SafeMath, Ownable, and ERC20 token contracts are used.

Results generated by the Order Match Engine only update the balance status in the JOYSO contract. Only normal users are able to interact with the smart contract and signatures are required for any action. At present it is not possible to call a smart contract, so there's no risk of a reentrancy attack. Further, we have limited the gas that external calls can use. An illegal execution would cause an 'out of gas' error that stops the transaction.

Cancellations of orders can be seen on the blockchain. If a user can not see a cancellation or has reason for concern, they have the ability to withdraw funds without our permission.

JOYSO is not vulnerable to front-running attacks by miners or traders because user gets the returned results in a second, as per the CEX experience. Even though JOYSO could theoretically front-run users by itself, users could detect that orders were not in sequence.

4. Multi-sig wallet

We use the wallet provided by the Gnosis team, unchanged. The contract is widely used by many well-known blockchain financial institutions including Bancor and has no dependencies on other libraries. For this reasons it can not be frozen in the way the Parity wallet was.

Governance

Legally, we are constituted in Taiwan, where crypto-currency is regarded as a commodity, not money.

We are aware of restrictions that apply to ICOs in certain countries and will prevent IP addresses there accessing those tokens in the exchange.

We have no involvement with fiat currencies so do not envisage any governance complications in that regard.

In terms of operational governance, much of this is handled by the JOYSO Aadmin account.

- It sends the matched order automatically to the smart contract, confirming the transaction and settling the funds of each counterparty.
- It broadcasts operational status changes; for example, the launch of a new function, the blockchain's current traffic load, system maintenance requirements, etc.
- It is the way we manage the deployment of new smart contracts, notifying users to withdraw funds and tokens from the old contract in a timely manner.

Code quality and testing

JOYSO use both behavior-driven development and test-driven development to ensure product security and a quality user experience. We use the Zeppelin Solidity framework to provide patterns for secure code that can be reused without duplication.

Performance testing is currently underway for the Order Matching Engine and trading engine. Immediately after the ICO, we will migrate these and the smart contracts to the Ropsten Test Network so that we can prove all functions executable.

We have done proof-of-concept on the testnet for deposits, withdrawals, order matching and order cancellations. Server-side is operational. We are currently testing the server and working on further reducing gas costs.

There are two arms to our server security; internal server-side testing and auditing done in the bounty program (to commence after the ICO). Face-to-face user testing and independent auditing will be done before the application is migrated to the mainnet.

Competition

All exchanges are competition; decentralized or not. Centralized exchanges still dominate the market and will for some time. They have the advantage of incumbency, though history shows market share can change quickly. We believe the market will appreciate the benefits of a hybrid architecture when they see a trustworthy, focused solution. Below, we discuss the principal competitors in the decentralized and hybrid exchange market segments.

EtherDelta

EtherDelta describes itself as a decentralized exchange, though it is more accurate to say it's a hybrid design. Transfers of money and trades are executed on the blockchain, in a trustless manner. But it operates a centralized order book with encrypted orders. It claims a million active trading accounts. In September 2017 a number of EtherDelta users had their private keys stolen while using the EtherDelta site. In December 2017, hackers gained access to EtherDelta's DNS server and were able to steal user's money with a fake site. These episodes demonstrate that decentralisation does not guarantee security.

Clients have been vocal on the subject of the site's user experience. In January 2018 the company publicly apologized to users "for all the confusion and mistakes on our site".

0xProject

0x has a similar structure to EtherDelta, though it's more of a platform than an exchange. Like EtherDelta it decentralizes settlement and uses a centralized server to handle the order book. 0x wants to 'franchise' decentralized exchanges. It shares its centralized server with all participating exchanges in order to create a larger liquidity pool. In return for access to improved liquidity, participating exchanges conduct all trades using 0x's ZRX tokens. In this way 0x increases the value of their own tokens.

The lack of automated matching in 0x and EtherDelta gives rise to arbitrage, where orders are filled to the disadvantage of those who don't cancel their orders quickly enough during market fluctuations.

0x allows for two kinds of orders, broadcast orders and point-to-point orders. This introduces the near certainty that people will execute point-to-point orders to circumvent fees charged in broadcast orders.

AirSwap

AirSwap is a peer-to-peer exchange network. Unlike 0x, AirSwap does not charge fees.

It's a decentralized exchange that does not employ a centralized order book. One-to-one trades rather than the conventional system, where bids are regularly posted and cancelled.

Traders use an off-chain Oracle (a software agent that communicates with the blockchain) to recommend pricing. Pricing is a critical element and it is far from clear that this method will match the performance of a centralized order book containing more price signals.

Rather than a finished product, the authors view AirSwap as a protocol and two APIs that may develop into something interesting in time, though we cannot discern a business model at present.

Because all aspects of the system are on-chain, questions remain about how quickly the exchange will run.

Kyber Network

Kyber is a DEX; it does not use a centralized order book and is entirely on-chain. It addresses the fees issue using smart contracts. Kyber holds reserves and 'shops' various other exchanges to get the best rate. There is a substantial amount of development required to effect this, and success depends on other software which Kyber does not control. Its ability to attract reserves is key, and providing the reserves is only attractive if the user base is extensive.

IDEX (Aurora Labs)

This is a real-time HEX platform, with centralized matching and blockchain settlement. Traders can fill multiple orders at once and cancel orders without incurring gas costs however it does not have the sophisticated matching mechanisms that JOYSO employs.

The back-end and smart contract architecture is quite different to JOYSO's. Gas fees will be considerably lower for JOYSO users - one taker can match many makers in a single transaction. We have also successfully experimented with a new method that zips the input arguments of contract methods, further reducing the gas fee.

IDEX is part of an ambitious project to develop a completely decentralized global banking network built around a stablecoin, an asset with price-stability characteristics. Though we think this idea is interesting, we note that no such coin has yet proved successful, and many have been attempted.

The Blocknet

Similar to IDEX, Blocknet's exchange is part of a larger project. This system aims to enable "open-ended communication and delivery of services between users of different cryptocurrencies". They describe their product as a general purpose infrastructure for inter-blockchain services. Again, the scope of the project should not be underestimated.

Other competitors include OasisDEX and Radex. These are on-chain exchanges whose market appeal may be limited by the slow block confirmation times their systems are built around.

Bancor

Bancor conducted a very large ICO in 2017. It's a decentralized liquidity network which allows the exchange of Ethereum tokens without a counter-party. Token owners must use Bancor's token, deposit a substantial reserve, and use a price-setting function which readjusts the current price according to the weight of purchases and sales. In theory this will lead to price fluctuations based on actual sales rather than market sentiment.

This is a radical departure from conventional exchanges. Bancor's smart contract is complicated, and exchanges using the network will require considerable resources because of the vast number of internal transactions involved. Tokens wanting to participate must conform to Bancor's own standards, in addition to ERC20.

Business model

Trading fee discount

Income will be generated from trading fees in ether or JOY effective from the beta launch; May 2018. These will be set around 0.1% for order makers and 0.2% for order takers.

Our price strategy is to attract users with a 50% discount for JOY token use. We will generate transactions and advertising by offering free and frictionless listings to ICOs.

Advertising on JOYSO through the JOYSELECT program will also be competitive, with a 50% discount for ICOs paying with JOY.

Token reduction plan

Each quarter, we will burn JOY tokens equal to 50% of our net profits, until 50% of the total supply (100 million JOY) are destroyed. The process will be announced on the blockchain. Eventually we will destroy 100 million JOY tokens in total, leaving 100 million JOY tokens.

This will be our commitment to our investors.

In the second phase

When available as part of our second phase, we expect margin trading to be very attractive to users, as the collateral required for trading using the JOY token will be lower than with ether.

Compared to centralized exchanges, we offer reduced settlement costs and low-cost integration with wallets due to efficiencies in smart contracts and blockchain. We expect to generate increasing business as word spreads through the community.

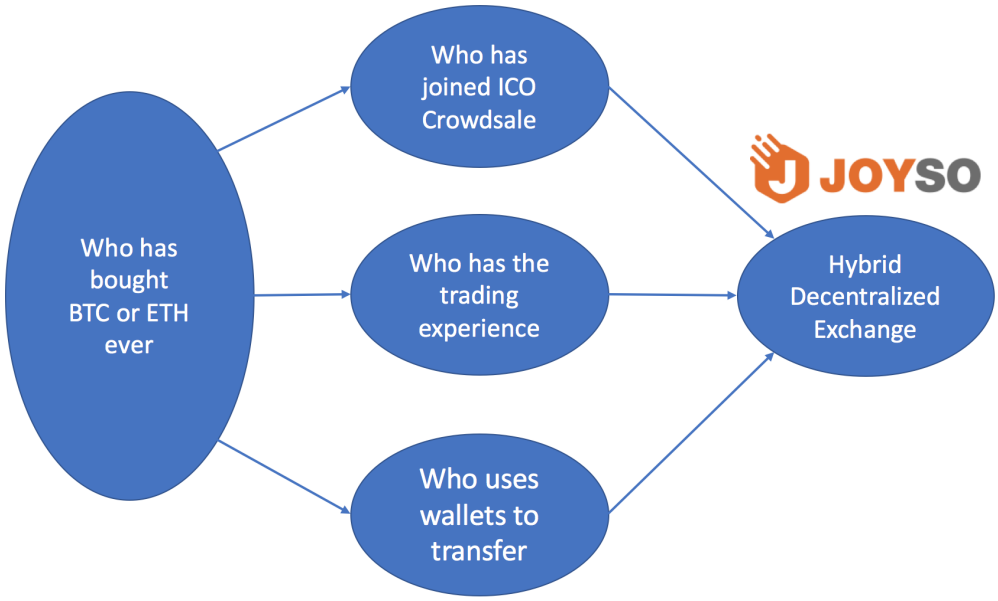
The efficiencies of the HEX exchange structure create a low cost operation with an attractive feature set. Because we don't store the private keys of users, we don't require expensive hardware and software systems to segregate/protect them. We mitigate the

higher gas fees normally associated with decentralized exchanges by zipping the input arguments and optimizing the gas consumption.

Marketing plan

Target Market

People between the ages of 25 and 35 who are interested in digital currency or fintech investment opportunities. Initial focus on select national markets.



Target Audience:

Market segmentation and the user experience journey

Positioning

JOYSO is a hybrid exchange (a HEX). It offers traders the speed and features of a centralized exchange with the privacy and security of a decentralized network.

Communication points

For CEX users:

- Do you really want to give an exchange your private keys?
- Do you really want to let an exchange fully control your funds?
- USD$1B in crypto hacked/stolen in 2017

For DEX users:

- Why is this so hard?
- Why is this so slow?
- Why so much gas?

Channels

Based on our market research and advice, we will focus activity primarily on Taiwan, certain Asian countries and certain English-speaking markets.

Because of our strong connections with early Bitcoin adopters in China and Singapore, we believe we will connect powerfully with many overseas-based Chinese people wishing to invest in ICOs.

And because of our long-term links with the Bitcoin and Ethereum communities in Taiwan we expect to have strong advocacy there.

Advertising and social media

With our digital advertising partners we are implementing a comprehensive marketing program between January and March 2018.

Creative content, including livery, artwork and video is currently under development in multiple languages.

Twitter, Telegram, YouTube, Google AdWords and Facebook content is being prepared. We plan a comprehensive retargeting campaign as part of the plan.

Community building and other promotion

Customer engagement will be through both social channels and offline gatherings. JOYSO management has experience running education conferences and events and we will use this to advantage.

We will attend conferences and crypto events in the target countries where we believe we can raise our profile through good sponsorship deals, build profile through appearances on credible industry panels and network with potentially valuable partners.

We will appoint a professional public relations consultancy to target key media channels and opinion leaders.

Pricing

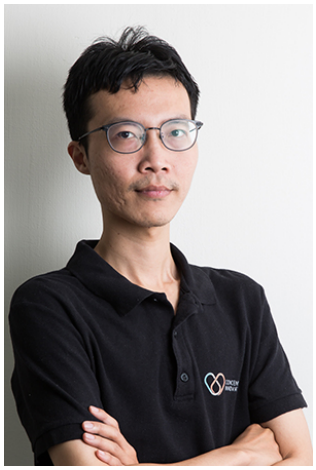
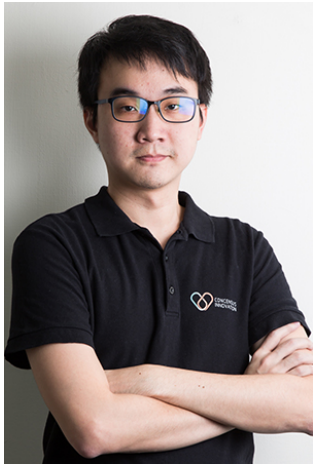
- JOYSO gas costs will be lower than decentralized exchanges
- Our 50% discount on commissions with JOY tokens makes us one of the lowest cost exchanges
- ICOs can list with JOYSO without audit costs

Team

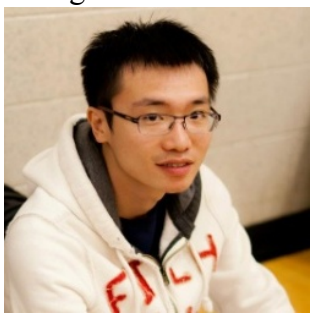
The team comprises eight full-time and three part-time employees. The JOYSO project developed out of Consensus Innovation Ltd, a blockchain innovation incubator active in Taiwan and internationally. Consensus has worked on copyright, music and financial projects, including one with Taiwan's largest financial institution. The core team contributed to dodocker.com, a blockchain-based crowdfunding enterprise, and has been working on the JOYSO project since 2017.

Team	Introduction
宋倬榮 TomSoong [Tso-Jung Sung] CEO 	While working at Alchip Technologies (cutting edge ASIC solutions), Tom supervised development of the world's first 28nm Bitcoin mining chip. In 2014 he founded AlcheMiner and brought to market a 40nm Litecoin mining chip which garnered 20% of Litecoin mining power. Blockchain advisor to Taiwan's Industrial Technology Research Institute (ITRI), one of the world's leading technology research and development institutions. Administrator of the Bitcoin Chinese Community, which has grown to over 32,000 members, and the Taipei Ethereum Meetup group. Former digital integrated circuit designer at Realtek, one of the world's largest integrated circuit design houses. Tom is a successful innovator with a deep commitment to improvements in the blockchain space. He has a B.S. and an M.S. in Electrical Engineering from National Tsing Hua University, the most academically successful of Taiwan's 160 universities.

高崎鈞 Taka [Chi-Chun Kao] COO 	Taka is the former Technical Manager of the Industrial Technology Research Institute. He has been a researcher for the Board of Science and Technology, part of the executive branch of the Taiwan government. In this role he was accountable for blockchain advocacy in the public sector and for digital policy coordination. Over ten years at ITRI, he has project managed a diverse range of digital and big data projects. For the past two years he has been the principal organizer of the Taiwan Blockchain Summit. Technical architecture contributor to the Dodoker project, a blockchain-based crowdfunding platform Taka has a B.S. and M.S. in Mechanical Engineering from National Taiwan University, one of the top ranked universities in the world.
謝咏宸 Will [Yung-Chen Hsieh] CTO 	Will is a PhD candidate in Computer Science at National Taiwan University. He has been a key contributor to GCoin, a permissioned, distributed blockchain infrastructure for enterprise, and the first open source blockchain implementation in Taiwan. He has also been part of the development team for the DiQi digital token wallet platform, which aims to improve user experience around blockchain services. He is active in the Ethereum Taipei Meetup community and is a committed educator, having taught blockchain and smart contract courses and authored many articles. He has been responsible for smart contract development at JOYSO.
陳翊銓 Emn178 [Yi-Cyuan Chen] System Architect	Yi-Cyuan is a full-stack software engineer with over ten years' experience in software development. He is a regular

	contributor to many open source projects on GitHub, including js-sha3. His employment history includes front and back end development, as well as settlement and clearing at Titansoft Ltd., a global online gambling company with over 100,000 concurrent users. He is responsible for the full stack work at JOYSO.
朱昱翰 John [Yu-Han Chu] DevOps Engineer 	John is a full-stack software engineer. He built and still operates the largest crypto-mining community in Taiwan. Privately, he has founded four mining pools; GPUMINE ETH, Zen, Whale and Music. He began the GPUMING community in 2015 and it now has over 16,000 members. Principally, he has been doing back-end development at JOYSO.
陳鼎元 Kevin [Ting-Yuan Chen] Legal	He graduated from National Chen-Chi University with a law degree, Ting-Yuan has worked at Tien Heng Attorneys-at-Law and Li & Cai Intellectual Property Office Legal Department as arbitrators. In addition to his background in the legal industry, Ting-Yuan has also worked in food, media, education and manufacturing industries. He is fluent in Mandarin Chinese, English and Japan, as he has worked in China, America and Japan over the past decade. Ting-Yuan entered the Block

	chain community two years ago, and is now working as our legal specialist.

Advisors	Introduction
周宇修 Clarence Chou [Yu-Shiou Chou] 	Bachelor of law, National Cheng-chi University Master of law, National Cheng-chi University Visiting Scholar at Columbia Law School An-Chung Attorneys-at-Law Li & Cai Intellectual Property Office lawyer PILnet: the Global Network for Public Interest Law Fellow Taiwan Association for Human Rights executive member Amnesty International Taiwan Executive Director Taipei Bar Association Executive Director
陳昶吾 Chang-Wu Chen 	Dr. Chang-Wu Chen serves as the Chief Scientist at AMIS and is also an Adjunct Assistant Professor at National Chengchi University. There, he is researching the consensus protocol, Casper; seminal in Ethereum's transition to a Proof of Stake system. He is a contributor for Ethereum Research on Casper. He has worked as a senior blockchain engineer for 21Vianet, the largest independent data center operator in China, and was a visiting scholar at the University of Illinois from 2015-2016.

	He received B.S. and Ph.D. degrees in Computer Science and Communication Engineering from the National Central University, Taiwan, in 2007 and 2016. His research interests include wireless networks, network security, vehicular networking and blockchain.
杜宏毅 Tony Tu [Hung-Yi Tu] 	Dr. Tu Hung-Yi has been the Chief Strategy Officer of TAIWAN-CA Inc. since 2008. He brings expertise in strategic planning and market development, focusing on e-business security and new e-business fintech models. Dr. Tu has led several national projects, such as the project to build the Taiwan Personal Financial Information Identification Center, the POC blockchain project for a Taiwan Automated Clearing House, and a project to deliver e-Certifications over multiple mobile devices for new generation financial services. Dr. Tu served as Associate Professor in Department of Computer Science and Information Management in Providence University from 1993 to 2000, and received his Ph.D. degree in Computer Sciences from Purdue University in West Lafayette, USA. In April 2000, he joined HiTRUST Inc., a Certification Authority company, as Senior VP - Product & Marketing. Dr. Tu received his Master and Bachelor degrees in Computer Engineering from Chiao-Tung University in Taiwan, R.O.C., in 1986 and 1984 respectively.
Bret Treasure	Advisor, marketing consultant and digital content creator in the blockchain and smart contract space. White papers, content strategies, social media and traditional channels. Founding board member, Blockchain Australia. Immediate past president Australian Web Industry Association and Chair of Judging, Australian Web Awards.

	
謝楨國 Ben Hsieh [JHEN-GUO SIE] 	JHEN-GUO SIE is the general manager of NTT Data Taiwan and is responsible for the SAP business and management of the Taiwan and Greater China region. NTT Data is the biggest IT servicer in Japan. To cooperate with the development of the global blockchain, NTT established the tactical team, focusing on financial, public and social infrastructure, and the field of B2B service. More than 100 tactical blockchain businesses and contracts will be signed before March, 2020.

Partner	Introduction
MAKER	MakerDAO Due to large fluctuations in the cryptocurrency market, investors demand a cryptocurrency whose value is stable relative to fiat currency. It is our pleasure to have MakerDAO as our strategic partner, which we plan to adopt MakerDAO's stable coin, Dai. The value of Dai will be stable relative to the U.S. dollar.
NTT DATA Global IT Innovator	NTT Data Corporation (株式会社エヌ・ティ・ティ・データ Kabushiki-kaisha Enu-tī-tī Dēta) is a Japanese system integration company and a partially-owned subsidiary of Nippon Telegraph and Telephone (NTT). Japan Telegraph and Telephone Public Corporation, a predecessor of NTT, started Data Communications business in 1967. NTT, following its privatization in 1985, spun off the Data Communications division as NTT DATA in 1988, which has now become the largest of the IT Services companies headquartered in Japan. NTT DATA is a publicly traded company, but is about 54 percent owned by NTT. Its business areas are in national and local governments, financial, and telecommunication sectors. According to reports in 2012, Forbes Global 2000 recognizes NTT DATA as the 5th largest IT Services company.

Roadmap

Business	Timeline	Product
Concept & research	2017.9.15	
	2017.10	Project start
Official landing page	2018.1. 20	Architecture & coding
Pre-ICO	**2018.2.01**	Prototype demo video
ICO start	**2018.3.01**	Prototype release on testnet
ICO end	2018.3.21	Testing & bounty
JOYSO launch	**2018.5**	Product release on mainnet
	2018.9	Service scaling
Reach $20M daily trading volume	2018.12	Cross-centralized exchanges via trading API
	2019.3	Margin trade on contract
Reach $1B daily trading volume	2019.6	Off-chain payment service
	2019.9	Mobile payment and wallet

Token sale

Token sale details	
Market positioning	JOYSO offers traders the speed and features of a centralized exchange with the privacy and security of a decentralized network.
Token name and ticker	JOY
Token issuer	Consensus Innovation Ltd.
Token type	Ethereum ERC20
Price	1 ETH = 10,000 JOY.
Total issuance	Total tokens generated: 200,000,000 (100%) Distributed for ICO：100,000,000 (50%) Distributed for private placement：50,000,000 (25%) Reserved by JOYSO team：50,000,000 (25%)
Purchase cap	No purchase cap will be applied
Schedule	ICO event commences March 1, 2018 08:00 (UTC+0) ICO ends March 22, 2018 08:00 (UTC+0).
Handover of tokens	Concurrent with smart contract exchange
Transferability	Transferred upon purchase. Tradable after ICO ends
Trading commencement	Late March, 2018
Unsold tokens	All generated but unsold tokens will be released over future years at a rate no higher than 15% per annum.
Legal advisors	Clarence Chou

Application of funds

Post ICO, funds will be applied as follows:

	Application	Principal tasks
35%	Product development	Development of trading engine, order match engine, smart contracts, migration to main net, security protocols, back-end development, wallet integrations, front-end development, mobile development, testing, margin trading support, stable coin(Dai) testing, cross-centralized exchange development
20%	Marketing	Targeted advertising Inbound marketing Attendance, exhibiting, sponsorship of conferences and events Social media platform development, content creation including video Community development and engagement on prominent platforms Partnership promotion and offers
15%	Operations	DevOps environment, status monitoring and reporting, system deployment and backup, load balance, performance tuning, issue tracking Customer services and support team, token auditing and listing, market price watch and trading fee updating, Funds settlement and operating report
10%	Legal compliance	Prepare for new regulations due to the rapid changes in the digital world.
10%	Security Bounty	To facilitate independent, low-cost auditing of JOYSO systems to reach the security level of tamper resistance and disaster recovery
10%	Team Reward	To encourage and inspire team growth

THANK YOU!

For information please contact us at

info@joyso.io

or join our Telegram group at

t.me/joyso_io