ripaex

crypto
asset
marketplace

WHITEPAPER

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1. Abstract

Ripa Exchange is a hybrid-decentralized exchange with a strong focus on lowering the entry level of opening new exchanges and giving crypto traders safe and secure trading partners to operate on a daily basis.

The team of Ripa Exchange believes that, despite the recent developments in the world of cryptocurrencies, it is still expensive to open, manage and build trust on a newly created exchange not only for the resources need to run a reliable exchange platform but also for the build of the platform itself and to find the liquidity necessary to run a profitable business in the first 3-5 year gap.

Action is needed and action is needed now. Users are frustrated with unreliable exchanges that run away with their funds, got hacked or does not sustain the load of a growing industry like this is. Despite the effort of exchanges managers to offer efficient, reliable, and easy to use platforms to trade entry prices for building such platforms is in the rage of five-six hundred thousand dollars and that does not include personnel cost to give platinum customer support, platform infrastructure and daily expenses for the business. All of that for then having an decent exchange platform for which you will need to pay an external software company to make changes as you request.

It is the aim of this project to give you an Open Source, efficient, reliable exchange platform and to give the needed liquidity[1] to your newly created exchange from day **one** so you can focus on finding your customers, give platinum support and comply with all the heterogeneous laws in the industry. As we want that the customer experience will be the best (the sleekest) as possible while making them safer to trade.

[1] Thank you to the RLSP (Ripa Liquidity Service Provider) technology

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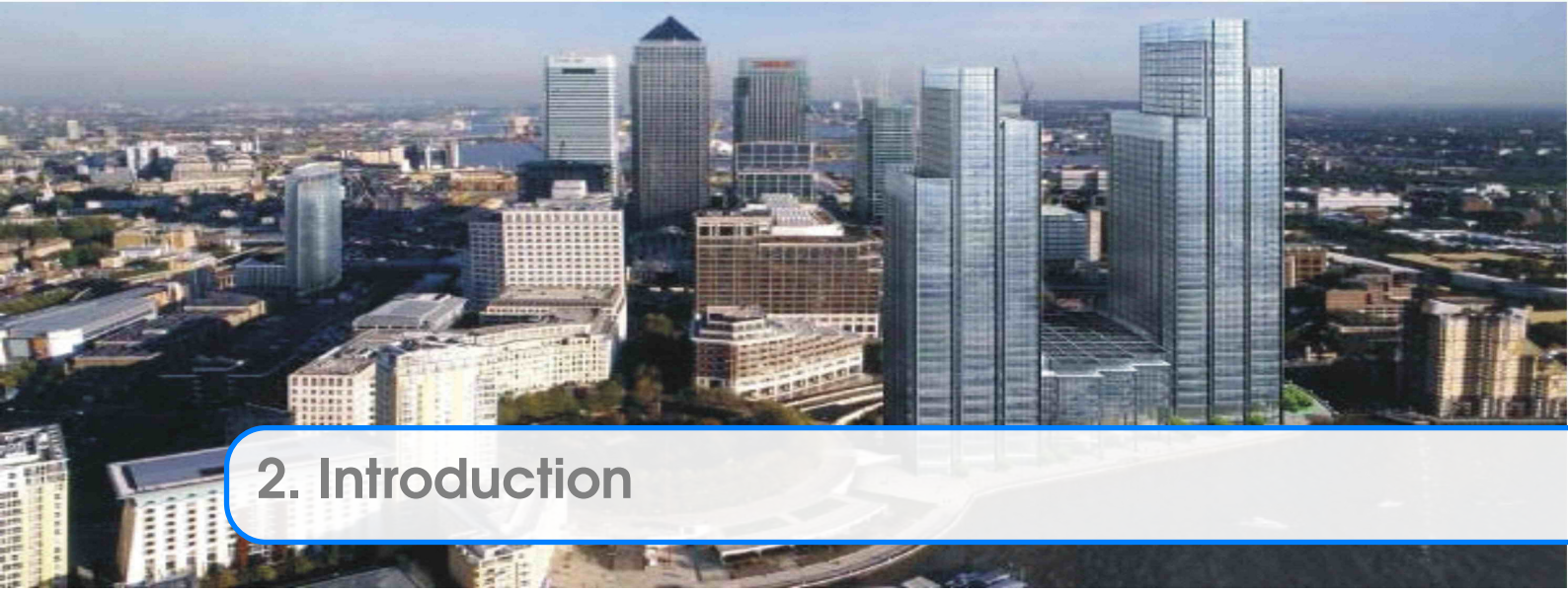


2. Introduction

- The industry of virtual currencies has (a high entry level from a technical point of view for the average user and) an high entry level from an economical point of view for the average entrepreneur for buying a reliable cryptocurrency exchange source code, to hire professional DevOps personnel, to hire customer support operatives, to comply with national and international AML/KYC regulations to have liquidity from day one of the exchanges operations. We want to lower this entry level because **running an exchange is HARD** and we want you to focus on things that matters not of caveats that the industry require because you want to start to make business in this industry and you need the source code to do it.

To strengthen that there is the point that starting an exchange require an high level of investments form your venture capital and also with that the profit of your exchanges operations are not guaranteed in the first 5 years timespan.

For building a professional exchange services we think that the source code of your exchange and the liquidity to offer to your clients from day one should be given to you free of charge: no more paying $150,000.00 to a company just to have a platform that works and for which you need to pay another $100,000.00 - 150,000.00 just to brand it and customize as for your needs so you can tide your business to a company that may go bankrupt in the future and found you in trouble as you never had the source code of the product your business rely on.

We believe that all of this should be free and we should offer you the best technology in the market so you can focus on your business while we focus on building the technology to run your business in an efficient, secure, responsive and productive way. That is why Ripa Exchange is focusing on building a network of exchanges focusing on an exchange architecture that is *efficient, secure, UI responsive, compliant and customizable* so each exchange in the network can rely on solid foundations while customising its single exchange instance for the needs the business entity of that particular exchange installation needs is easy to you/accessible to you.

For reaching that goal we chosen to build our Ripa Liquidity Service Provider technology on top of ARK - a blockchain for consumer adoption - which primary focus is increasing consumer adoption for blockchain technologies focusing on two critical areas: A Fast Secure Core Technology and Practical Services for Real People. ARK ecosystem is still at its early stage of development: in current implementation there is the possibility to run smart contracts natively on the ARK 2.0 blockchain, this will permits this blockchain technology to compete with Ethereum from a technological point of view. RLSP will permits to share the same liquidity-orderbook to each exchange in the Ripa Network based on single exchange installation privacy rules, preferences in the admin area of your single exchange instance.

The Ripa Founder Team (RFT), as presented on ripaex.io, acts in the name of the Ripa Crew. The RFT is responsible for the proper use of funds collected under the Token Exchange Campaign (RIPA - TEC) presented below in this document.

The RFT undertakes that the result of this TEC will be used exclusively for the financing of

the *Ripa Exchange* project as explained in this whitepaper - which will be made available on the collection platform: tec.ripaex.io - and which should result in the creation of a legal entity whose name will be *Ripa Exchange*. The creation of this company is scheduled for the first quarter of 2019.

To this end, RFT intervenes on behalf of *Ripa Exchange, a company in the process of being incorporated*.

2.1 Key Terminology

RIPA EXCHANGE: a FIAT <-> CRYPTO exchange (a cryptocurrency exchange) based on the source code of Peatio [14]

RIPA BLOCKCHAIN: a DPOS blockchain in which liquidity is exchanged for all the exchanges in the Ripa network

RIPA TOKEN - XPX: a cryptographically secure token exchanged on the Ripa blockchain based on the DPOS protocol

RIPA: the DPOS financial ecosystem composed of Ripa Exchange and Ripa Blockchain

RIPAEX: the name of the project, project website and hosted domain

RLSP: Ripa Liquidity Service Provider, a shared orderbook to exchange orders between exchanges in the same Ripa network

ARK: a platform for consumer adoption of blockchain technologies [5]

ACES: Ark Contract Execution Services [4] provides simple protocols and tools for building a robust blockchain service marketplace based on the ARK SmartBridge technology

“,” OR “.”: The Anglo-Saxon use of decimal points and commas to represent numbers has been chosen for the purposes of this document: that is to say that a “.” represents a decimal point, and a “,” distinguishes between multiples of thousands, millions and billions.

2.2 Roadmap

There are essentially four phases to the RipaEx project:

FUNDING THE PROJECT: XPX PRESALE AND RIPA TEC (WP2)

This phase recognises the existence of interest in this market development from across the World concerning the lowering of the entry level for building a cryptocurrency exchange. It aims to make the first comprehensive analysis of this state of the art to form the basis of the later project phases and build the first working prototype of a centralized exchange based on Peatio.

PHASE ENDING JANUARY 2019.

FIRST EXCHANGE OPENING AND DEVELOPMENT OF TOOLS AND RESOURCES (WP3)

The second phase takes the results of the first and develops from them a set of tools and resources which provide concise and comprehensible guidance to market actors in any Country. With the first instance of Ripa Exchange running first contacts with other economical players in the industry can be done.

PHASE ENDING JUNE 2019.

DISSEMINATION (WP 7/8) AND PROJECT COORDINATION (WP1)

During the full duration of the project, dissemination activities (WP 7/8) are carried out in which results from the individual work packages are disseminated to relevant target groups including project partners, RipaEx supporters, exchanges managers, banking partners as well as relevant target groups. This phase covers a wide range of dissemination techniques, from printed and electronic handbooks to workshops and training sessions, ongoing networks, all having the ultimate goal of defining a standard for exchanges communication among public and private entities. An overarching work package is concerned with the management of the project from start to finish, ensuring proper coordination, quality assurance and budgetary control (WP1).

DEVELOPMENT OF HYBRID-DECENTRALIZED EXCHANGE (WP 4-6)

Using the tools and resources developed in WP3, Work packages 4-6 focus on bringing collected knowledge and tools into practice. The three work packages reflect three major focal points (and target groups) within the network of exchange created for establishing successful demonstrations on local scale: incorporations of local Ripa Exchanges (WP4), technical analysis for the Ripa Liquidity Service Provider (WP5), and first MVP of the hybrid decentralized exchange (WP6). The demonstration phase forms the heart of the RipaEx action; WP 2 and 3 are focused on providing deliverables (e.g. tools) that enable successful and efficient demonstration activities.

PHASE ENDING JANUARY 2021.

2.3 RipaEx Partners - RipaEx Governance

Most of the partners are entrepreneurs in the virtual currency industry, but a research institute and Financial Organizations are also represented. The Partners are:
Coordinator : Ripa Exchanges Ltd
CoBeneficiaries :

2.3.1 RipaEx Governance

Governance for the network of exchanges created, development of the source code, owning of the XPX tokens, Ripa Foundation.

2.4 Project Summary

1. WHAT: RipaEx is a project to facilitate the uptake of standards to share liquidity between crypto assets marketplaces. The objective of RipaEx is the promotion of shared source code for wallets and exchanges in the virtual currency industry: It is the aim of this reference document to give in-depth information to prospective exchange developers, or exchange managers, to enable correct decision-making and to ensure success for their proposed projects. It seeks to analyse the real potential in the Country of application for a network of cryptocurrency exchanges, and its place in the market.
2. WHAT: Crypto assets are an alternative to centralized assets managed by (country-specific) stock exchanges. Although certain stock exchanges gives the possibility to their users to verify and manage the assets they own the verification process is not always transparent that is the reason because from 2009 [9] onwards a new types of (community-verifiable) assets have been implemented to give small, medium and big investors complete transparency in the managing of their investments assets.
3. WHEN: Recent developments at European Union level and worldwide are transforming both how virtual currencies are treated and the way ICO (Initial Coin Offering) are legislated. These combined developments have made the use and production of virtual currencies an increasingly favourable prospect.
   In October 2015 the European Court of Justice ruled that bitcoin and other cryptocurrencies are exempt from VAT taxation.
   In July 2016 the European Commission adopted proposals for legislation to amend the 4th

Anti-Money Laundering Directive (4AMLD) that will bring virtual currencies exchanged and wallet providers into the EU's anti-money laundering framework [6].
In February 2018 the European Commission launched the EU Blockchain Observatory and Forum [2] to highlight key developments of the blockchain technology, promote European actors and reinforce European engagement with multiple stakeholders involved in blockchain activities.

4. WHY: However there is still very little regulation performed on ICOs and only United States of America at the moment has undergone a legislation defining ICO tokens as securities. [11]
5. WHO: The results indicate that medium tech savvy from 18 to 45 is the average user of virtual currencies although the corporate finance companies are also starting to put virtual currencies schemes inside their portfolio especially since the presentation of the bitcoin futures contract from CME Group Inc. in the stock exchange of Chicago last 18th of December 2017.
6. HOW MUCH: Total virtual currencies market capitalization has been estimated around 317 B USD[1] and is predicted to grow to 5,000.00 B USD in the next ten years span [10].
7. WHERE: Local authorities are working with National Governments to make sure local exchangers in the national territory are complying with national and international AML/KYC regulations. Venture capitals and Angel Investors are starting to release financing solutions to start-ups in the Fintech industry all over the world from America to Asia passing through Europe and some Countries are starting state-owned cryptocurrencies schemes to test the exchange of goods & services on those (distributed ledger) technologies [15].
8. HOW MUCH: The average cost for starting your own crypto asses marketplace is around $ 150,000.00 only for a running instance of your exchange platform: to that you need to add costs to customize the platform before launch and in the future, advertising your new business, running costs for servers, network operators, support center operators and legal department to comply with your State of incorporation AML/KYC legislations and general company laws.
   That is the reason because we think owning the source code of your exchange software is the best way to run a business in this industry.
9. HOW: The main problems encountered in opening a FIAT <-> CRYPTO marketplace is to find trusted banking partners to comply with the many different AML/KYC rule and procedures to exchange virtual currencies to FIAT currencies.
10. WHAT: Classical types of exchanges operations are:
    10.1. **one-way exchanges**: in which a centralized application has all the liquidity to offer to its potential users
    10.2. **two-way exchanges**: in which a centralized or decentralized platform match the selling requests with the buying requests of its users

    On this a sub-classification is also necessary:
    10.1. **FIAT <-> CRYPTO exchanges**: in which exchanges operations are performed between FIAT[2] currencies and virtual currencies
    10.2. **CRYPTO <-> CRYPTO exchanges**: in which exchanges operations are performed only between virtual currencies

    You can build a matrix based on the four configurations above to build the exchange operation platform of your needs.
11. WITH WHAT: The specifications to look when choosing for an exchange platform to run are:
    11.1. **code**: Open Source, Closed Source or hybrid solution
    11.2. **modularization**: separation between exchange engine (orders matching engine), UI and user registry

[1] Coinmarketcap data April 2018
[2] Traditional central banks owned currencies like EUR, USD, GBP, JPY, others...

11.3. **UI responsiveness**
11.4. **compliance** with current industry standards
11.5. **customization** of the exchange engine, trading currencies, UI and other aspects of the crypto asset marketplace platform...
11.6. **security** of the funds: saving in cold wallets and hot wallets configurable
11.7. **transparency** of the funds: proof of solvency of the exchange
11.8. **Multi-Accounts trading**: easy to configure new virtual currency protocols
11.9. **Multi-Accounts users**: possibility to interact with user accounts from Google, Facebook, Twitter to login into the platform and FIDO Alliance security standards for personal credentials.

Those are not only technical decisions to be made but also economical especially the owning of the source code of your crypto asset marketplace platform is fundamental to make future customization of your exchange in an independent way compared to rely on a single software house that makes the customizations for you.

12. HOW: Options for finding users for your exchanges operations are: targeted marketing campaigns, innovative features in the industry, fee level based on trading quantities, bonuses for first registration and trading quantities, affiliate marketing for paying users to take their friends to your exchange.
13. HOW: For setting-up a crypto asset marketplace a project must take into account the following legislation:
    13.1. **AML/KYC**: *Fourth Anti-Money Laundering Directive* if business set up in the European Union [1] or the AML/KYC reference implementation to your crypto asset marketplace Country of incorporation (as an example *Intelligence Reform & Terrorism Prevention Act of 2004* written by FinCEN in the United States of America).
    International recommendations for undergoing AML/CFT verifications are given by the Financial Action Task Force on Money Laundering [8].
    13.2. **Payment Licence**: By far the biggest and most arduous task with regards to legitimising the FIAT <-> CRYPTO exchanges operations is obtaining a *PSD Licence* [3]. The PSD licence follows Council Directive 2007/64/EC and is applied in each country via its own national laws. Costs of an IPPC licence can vary between €XXXX and €XXXX, depending on the size of operation.
14. WHO: The nature of the business under consideration by the Ripa Exchange project (small scale, localised FIAT <-> CRYPTO exchanges operations), means that each enterprise likely to have 7 or 8 staff: N.2 developers, N.1 network/security operator, N.1 administrative, N.2 client support operators, N.1 legal and tax advisor.
    The turnover of such an enterprise however, because of the high value of the end product, is likely to be more than €350,000 a year and could be several times higher. A business of this scale lends itself to the following possible company structures: A simple partnership; A limited company; A non-profit company or social enterprise; A worker co-operative. Financial Agencies are potential key actors, but the type of business they can set up will depend on their legal status which does vary from country to country.
15. HOW: Potential sources of funds for a small-medium sized crypto asset marketplaces are: Bank Loans; Low Interest Loan Schemes; Commercial Credit; Equity financing; Business Angels venture capital. Having a robust Business Plan and financial guarantees are essential elements for securing funding. The European Investment Fund (EIF) of the EIB, offers support in the form of guarantees for SMEs.
16. WHY: The arguments for crypto asset marketplaces are for financial freedom, decentralizing of the value-transferring operations, and owning for real your money. There are other benefits, well documented, such as faster payments, long term gain based on deflationary economy

and prediction of Great Depressions like the one that hit the global economy in 2008. But above all, virtual currencies are the only direct competitor to centralized value-transferring operations done by central banks.

17. WHY: There is consensus in the literature that the use of virtual currencies in place of fiat currencies will result in higher financial freedom especially as they fit into the Austrian school of economy [7] (TODO: add more on Austrian economics school)
18. WHY: Benefits of virtual currencies schemes (TODO: put some numbers)
19. HOW: Securing assets on the blockchains means basically performing three operations
    19.1. **Generating a random private key**
    19.2. **Converting the private key generated in (1) into a public key**: a common protocol making this conversion in the virtual currencies industry is the ECDSA curve algorithm
    19.3. **Converting the public key generated in (2) into a virtual currency address**: common protocols for making this conversion are hash functions SHA-256, Base58 encoding, Base32 encoding

    At this point any value sent to the virtual currency address generated in (3) is secured on the blockchain of choice and accessible only from the owner of the relative private key generated in (1).
20. WHERE: The two critical factors affecting the cryptocurrency industry are banks concurrence and State banning. Although a harmonisation throughout Europe would be beneficial to development of the industry both in terms of taxation and warranty approvals, this is currently not the case. Each country has its specific legislation and tax regime for all exchanges operations involving FIAT money, and State banning is going to completely liberalization of this activities like European Union to complete banning and imprisonment of operators in this industry like Bangladesh [16].
21. WHERE: The Asiatic countries of South Korea, China and Japan are the leader in the field of cryptocurrencies for number of transactions for over 9 years with a proactive approach and favourable tax regime. At the beginning of 2017 in Japan bitcoin has been declared legal tender but China has recently declared illegal token sale and exchanges and local cryptocurrencies marketplaces are closing down.
22. WHERE: Any assessment of your local market should include: number of potential users to reach, type of exchange to incorporate (FIAT <-> CRYTPO or CRYPTO <-> CRYPTO), type of virtual currencies protocol to integrate (POW, DPOS, Masternodes, others...), types of services to offer (exchange only, advanced trading tools, payment processor, others...), if FIAT <-> CRYPTO exchange number of FIAT payments processors to accept (PayPal, OKPay, MoneyPolo, others...), number of others exchanges in your region.
23. WHO: there are a number of options for dealing with Warranty/Customer protection issues: creating consumer pressure by making clear to the end users that the possession of the private keys of their virtual currency addresses make **liable** for any loss of the private keys meaning nobody can help them recovering their funds if the their private keys are lost. Creating consumer pressure to not leave funds on exchanges ("*Be Your own Bank!!*"), making them choose the licensed exchanges in the market.
24. WHO: While it is very expensive to insure money exchanges operations and money transmitting operations, examples of customer protections in the industry are: Kraken platform which is offering Mt. Gox users partial refund of their lost, NEO community giving refund to the users involved in the BitGrail hacking, Ethereum supporters giving The DAO investors partial refunds, other hacking cases...
25. RECOMMENDATIONS FOR ALL/LAW COMPLIANCE: if you intend to incorporate a FIAT <-> CRYPTO exchange you should focus from the first instance on law compliance by studying the AML/KYC laws of the country of incorporation and finding bank partners to

work with. Local financial Authority can help to comply with rules & regulations and local cryptocurrencies foundations can help you to tune your exchanges operations to perform targeted operations based on the customers interests in the country of incorporation. Promote cryptocurrency-friendly users in the area of interest.

3. The Ripa Exchange

Ripa Exchange is an crypto asset (fiat money or cryptocurrency or something) marketplace, following the latest industry standards and resting in the principles of "*open source, secure and efficient*". Ripa Exchange aims to serve a platform for crypto-currency enthusiasts by providing a safe, secure, UI responsive, customizable and easy to use exchange that embraces open source principles and public trust.

Ripa Exchange is implemented with the Rails framework and other cutting-edge technology and will be migrated to an hybrid-decentralized exchange where all exchanges in the Ripa network will share liquidity thanks to the RLSP technology.

3.1 Mission

> "*Our mission is to build the world best open source crypto asset marketplace with a high performance trading engine and safety which can be trusted and enjoyed by users. Additionally we want to move the crypto currency exchange technology forward by providing support and add new features. We are helping people to build easy their own exchange around the world.*"

Help is greatly appreciated, feel free to submit pull-requests or open issues.

3.2 Features

A free, transparent and internationalized open source crypto currency exchange.

Open Source

All source code are fully released under the terms of the MIT License.

Ripa Exchange is a customizable cryptocurrency exchange solution architecture enables easy connection to KYC/AML, authentication, ETL/reporting, and other services.

Compliant

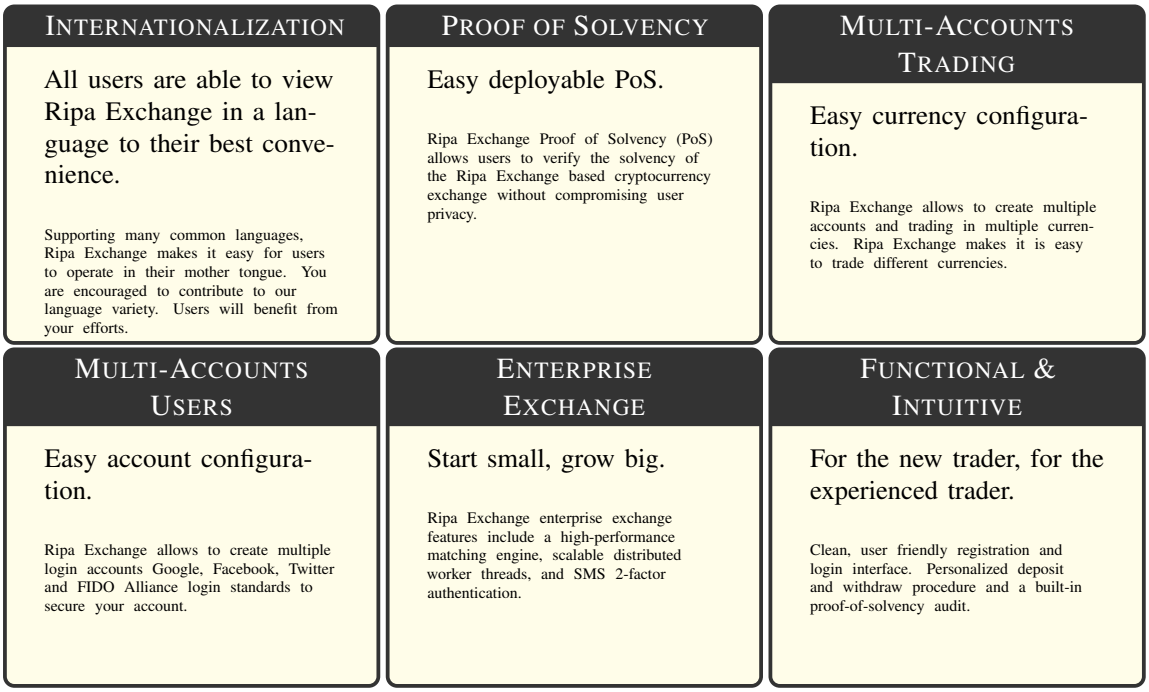
International KYC/AML standards.

Ripa Exchange KYC efficiently submits and exchanges KYC information to meet the banking supervisory standards and comply with Customer Due Diligence (CDD) requirements.

Transparent & Configurable

Customize in your own way

Major functions have been embedded in the source code – neat registration and log-in interface, personalized deposit and withdraw procedure, best match of bid and ask, etc. These functions are comprehensive and are ready to use with no extra work needed.



3.3 Functional Analysis

1. WHY REDIS-RABBITMQ IS NEEDED:
2. WHY NODEJS:
3. WHY PUSHER:
4. ER MYSQL:
5. RUBY FOLDERS HIERARCHY:

3.4 Technology Stack

RUBY ON RAILS :
MYSQL :
REDIS :
RABBITMQ :
NODEJS :
PUSHER :

3.5 User Interface

Ripa Exchange user interface is based on Peatio user interface a UI responsive user interface built in Ruby on Rails and completely separated from the exchange order engine. Design for a customised UI are in place to offer to Ripa Exchange users the best experience on all devices: here you can find some screenshot of the current exchange interface design.

3.5.1 End-User Interface

Following some screenshot of the end-user Ripa Exchange-Peatio interface: those screenshots are a work in progress and they may not represents the user interface of the final product

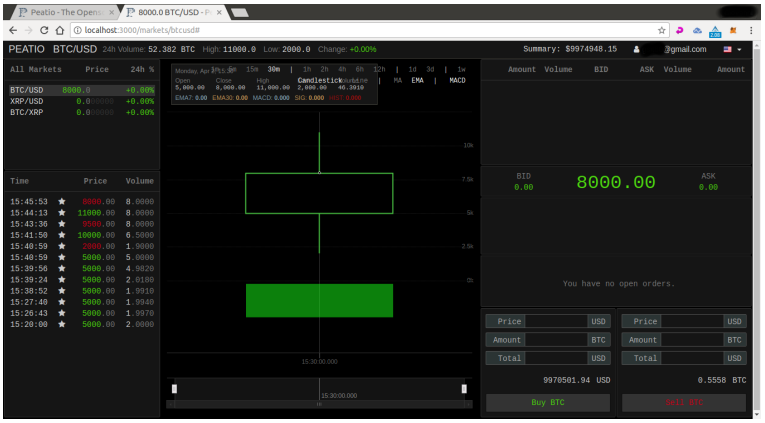


Figure 3.1: Ripa Exchange trading UI

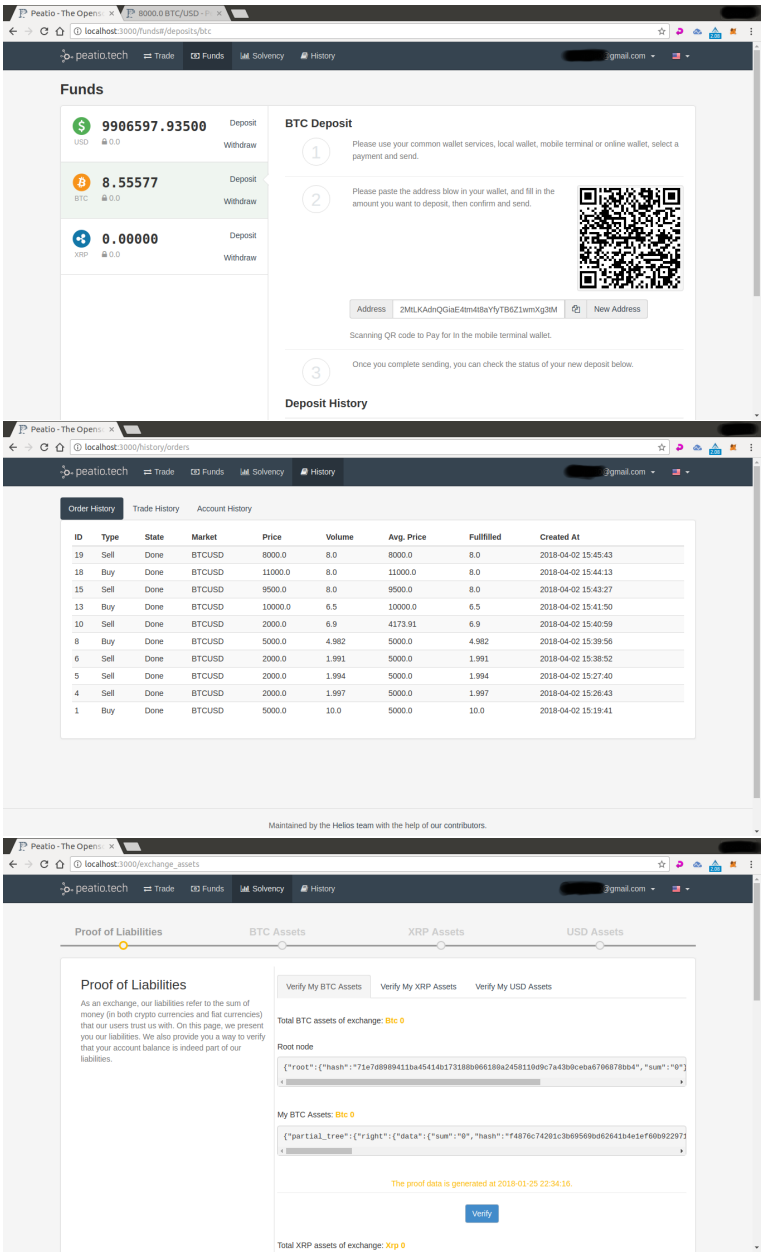


Figure 3.2: Ripa Exchange deposit/whitdraw, order history and solvency screen

3.5.2 Admin Interface

Following some screenshot of the administrative console of Ripa Exchange-Peatio interface: those screenshots are a work in progress and they may not rapresents the user interface of the final product

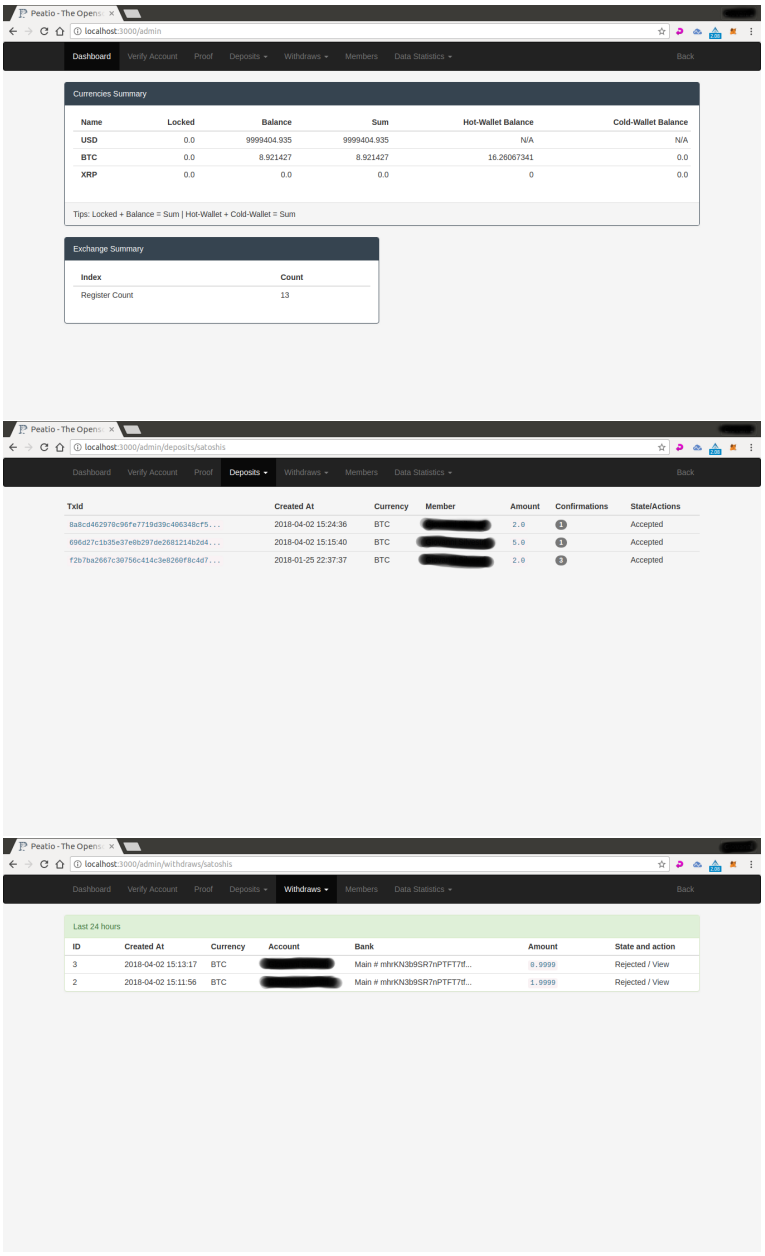


Figure 3.3: Ripa Exchange Admin console dashboard, deposit/whitdraw screen

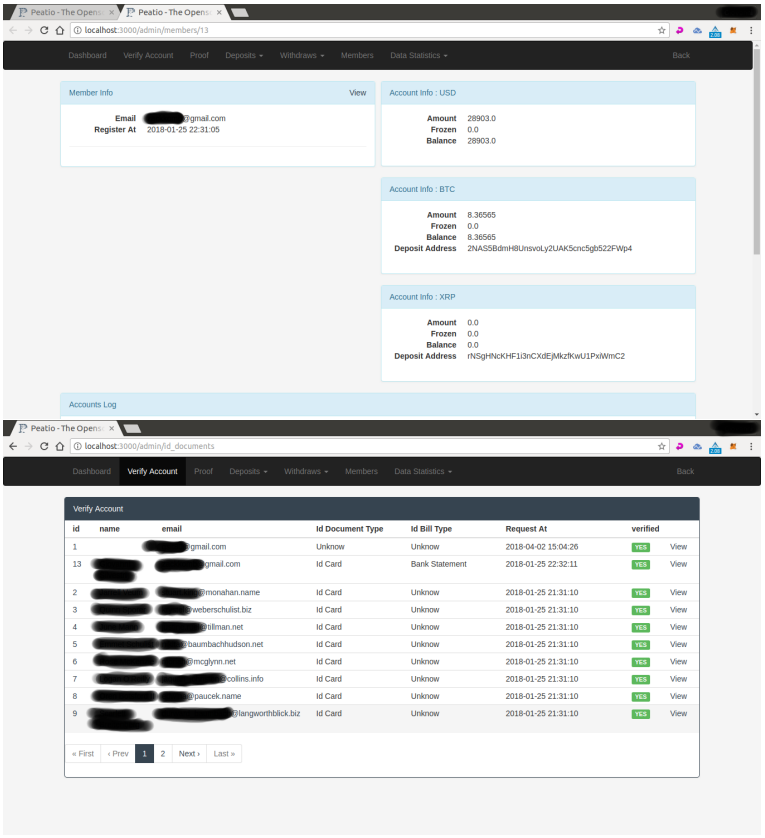


Figure 3.4: Ripa Exchange Admin user info and verify account screen

3.6 Features at Launch

CRYPTO <-> CRYPTO :
OAUTH : Facebook, Google, Twitter
FIDO : login with FIDO Alliance standards
PROTOCOLS : POW, DPOS, Masternode, tether, ERC20
CURRENCIES : BTC, ETH, DOGE, BCH, TUSD, ARK, LISK, SHIFT, RISE, KAPU, OXY, RIPA, promising ERC20 tokens
MAIN MARKETS : BTC, ETH, ARK
ORDERS TYPE : market, limit

3.6.1 Future Features

E-WALLETS : OKPay, NETELLER, MoneyPolo, others...
ADVANCED TRADING FEATURES : margin trading, stop loss and take profit,
FIAT <-> CRYPTO
OTHER TOOLS : VISA/MasterCard, merchants tools, P2P Lending

3.7 Towards a Decentralized Exchange...

Ripa Exchange is a centralized exchange which will be converted into an hybrid-decentralized exchange to create a network of exchanges that share the same liquidity between each of them so you can offer liquidity from day 1 of your exchanges operations.

To offer the PROs of a centralized exchange with all the PROs of a decentralized exchange without the CONs of both of them, we need to convert first into an hybrid-decentralized exchange and during phase 3 of our project (WP4-6) we will make all the functional and technical analysis required to make the next step on solid ground.

4. The Ripa Blockchain

The project RipaEx will have its own blockchain called Ripa which will be run on the DPOS protocol and has the ₱ token (XPX symbol) running on it that will serve the five following purposes:

1. to list new cryptocurrencies on Ripa Exchanges
2. to advertise new projects
3. to buy RipaEx gadget on Ripa Exchange Store
4. to pay for the sell of goods & services on authorized resellers with our RipaEx POS (Point of Sale)
5. to share liquidity between Ripa Exchanges in the same network

Ripa ₱ or XPX is a cryptocurrency derivate from ARK, Lisk, Crypti and BitShares with unique differences and improvements for reaching the goal of shared liquidity between exchanges in the same Ripa network. This code however inherits the simplified interactions between ARK and other blockchain systems using DPoS as their consensus. This homogeneous codebase allows for the potential to provide service bridges in the form of ARK-Lisk blockchain apps, along with any other additional systems provided by their blockchain administrators.

RIPA BLOCKCHAIN IS AN ARK FORK AND THE USE OF A BLOCKCHAIN TECHNOLOGY FOR THE NETWORK OF EXCHANGES CREATED WILL COMPLETE THE RIPA ECOSYSTEM BY PERMITTING EACH EXCHANGE IN THE RIPA NETWORK TO SHARE THE SAME LIQUIDITY. WE WILL ALWAYS ENTRUST ARK AS OUR BLOCKCHAIN TECHNOLOGY PROVIDER TO MERGE THEIR CODE INTO OUR LATEST FEATURES FOR WHAT CONCERNING THE RIPA BLOCKCHAIN

Explained the use of the Ripa Blockchain in the RipaEx ecosystem and explained the RIPA - ARK technological relations what is following are the specifications of the Ripa Blockchain derived/inherited from ARK.

4.1 Delegated Proof of Stake Technology

Ripa Blockchain, will inherits the Delegated Proof of Stake (DPoS) consensus system that was first introduced by BitShares. This consensus algorithm was designed to eliminate the issues associated with Proof of Work (PoW), namely the centralization of computing power and the exponentially increasing waste of real world energy. While not completely decentralized as it relies on consensus by a fixed number of elected delegates, it guarantees a better decentralization than Bitcoin. The consensus algorithm implementation is improved over time, evolving into an optimal consensus system.

The technical description of the Ripa blockchain is as follow:

1. DPoS (Delegated Proof of Stake)
   - 101 active forging Delegates
   - Delegates selected by vote mechanism built into DPoS
   - 115,000,000 RIPA - Seeded Genesis Block
2. Multi-signature accounts
3. Constant block reward
   - 2 ₱ per block
   - Inflation Rate (with 8s block times)
     6.31% for the first year
     5.93% the 2nd year
     4.02% the 10th year
   - 8-second block time
     - Decreased block time possible with future upgrades to the core.
   - 25 transactions per block
     - Increased via soft fork as needed.
4. Routing tables
5. SmartBridge data field for custom use and bridging blockchains (ARK Contract Execution Service)
6. Batch transactions[1]
7. Custom transaction fees[1]
8. Native smart contract execution[2]

AS SAID RIPA BLOCKCHAIN IS AN ARK FORK AND WE WILL ENTRUST ARK AS OUR BLOCKCHAIN TECHNOLOGY PROVIDER TO MERGE THEIR CODE INTO OUR LATEST FEATURES FOR WHAT CONCERNING THE RIPA BLOCKCHAIN, features like:

Scaling network up to the level of major Credit Card networks with core upgrades
- Increasing the number of Forging Delegates
- Increasing the Block Size to include more transactions
- Implementation of pre-approval PBFT block concept testnet [codename: TwinChain]
- Routing tables, to minimize hops among nodes when blocks are broadcast
- Include forging with RIPA Uncles.

Two node types is used to secure the RIPA network:

Relay nodes - Nodes with full API functionality, acting as a backend for the feature rich lite clients. Relay nodes do not collect any transaction fee and do not have the ability to Forge RIPA Blocks.

Forging nodes - Nodes with reduced API functionality, decreasing the exposure to potential DDoS attacks on the RIPA Platform. Forging nodes are able to Forge RIPA and receive transaction fees.

Official lite client for network access is be provided shortly before the mainnet launch including desktop clients (Windows, MacOS, and Linux) and mobile clients (Android and iOS).

OffLine wallet creation : the network itself does not use a Graphical User Interface by default. Any RIPA account can be created offline and managed at no cost with a single device (computer, mobile phone, embedded ARM, IoT).

[1] Future upgrade: when ARK 2.0 will be released

[2] Future upgrade: when ARK Virtual Machine will be released

4.2 Hierarchical Deterministic (HD) Wallets (BIP32)

The structure of the public and private key generation follows the same specification as Bitcoin. A custom implementation of BIP32 for Hierarchical Deterministic Wallets is provided to RIPA users.

4.3 Fees

The fee for standard transactions is set at ₱ 0.1 but the will be flexible in future releases of Ripa Blockchain. At mainnet launch, a fee structure is provided out of the box to forging delegates with the following rules:

- Transaction ₱ 0.1
- Vote ₱ 1 (101 votes per transaction)
- Second Signature ₱ 1
- Multi Signature ₱ 1 per signature + ₱ 1 per signing account
- Registering a delegate ₱ 25.

All fees are paid to the forging node which processes the block containing those fees.

4.4 Ripa Delegates and Delegate Voting

Any node running the core blockchain code wishing to become a forging node must register their account within the RIPA network. The fee for this registration is set to 25 ₱ per delegate account registered. RIPA incorporates a new DPoS voting system originally envisioned by the Crypti Founders. The RIPA system fee is 1 ₱ per delegate vote. The voting weight of each wallet will be split evenly between all delegates voted. For example:

- If a wallet votes for one delegate, that delegate receives 100% of the wallets voting weight.
- If that wallet votes for an additional delegate, the entire vote weight is split evenly between the two delegates at 50%.
- By adding a third delegate, the voting weight splits again, and each of the three delegates receives 33.333% of the voting weight from that wallet.

The 101 forging nodes with the highest number of votes are eligible to Forge RIPA blocks. This design eliminates the possibility that any single large RIPA holder or an organization holding large percentages of RIPA are able to gain control over the entire network by voting for all of their nodes into forging positions, thus effectively taking complete control over that DPoS Blockchain. Votes from RIPA Tokens held by RIPA Crew may be used at RIPA Crew's discretion.

4.5 Connecting Blockchains

4.5.1 ARK Bridged Blockchains (SmartBridge Technology)

The ARK Platform does not provide direct support for sidechains or dapp databases. Instead, a mechanism to bridge together blockchains is provided via a bridging function built into ARK Core where any blockchain can send and receive trigger function notices and informational data through the primary ARK network via custom developed **SmartBridge(s)** and **Encoded Listeners**.

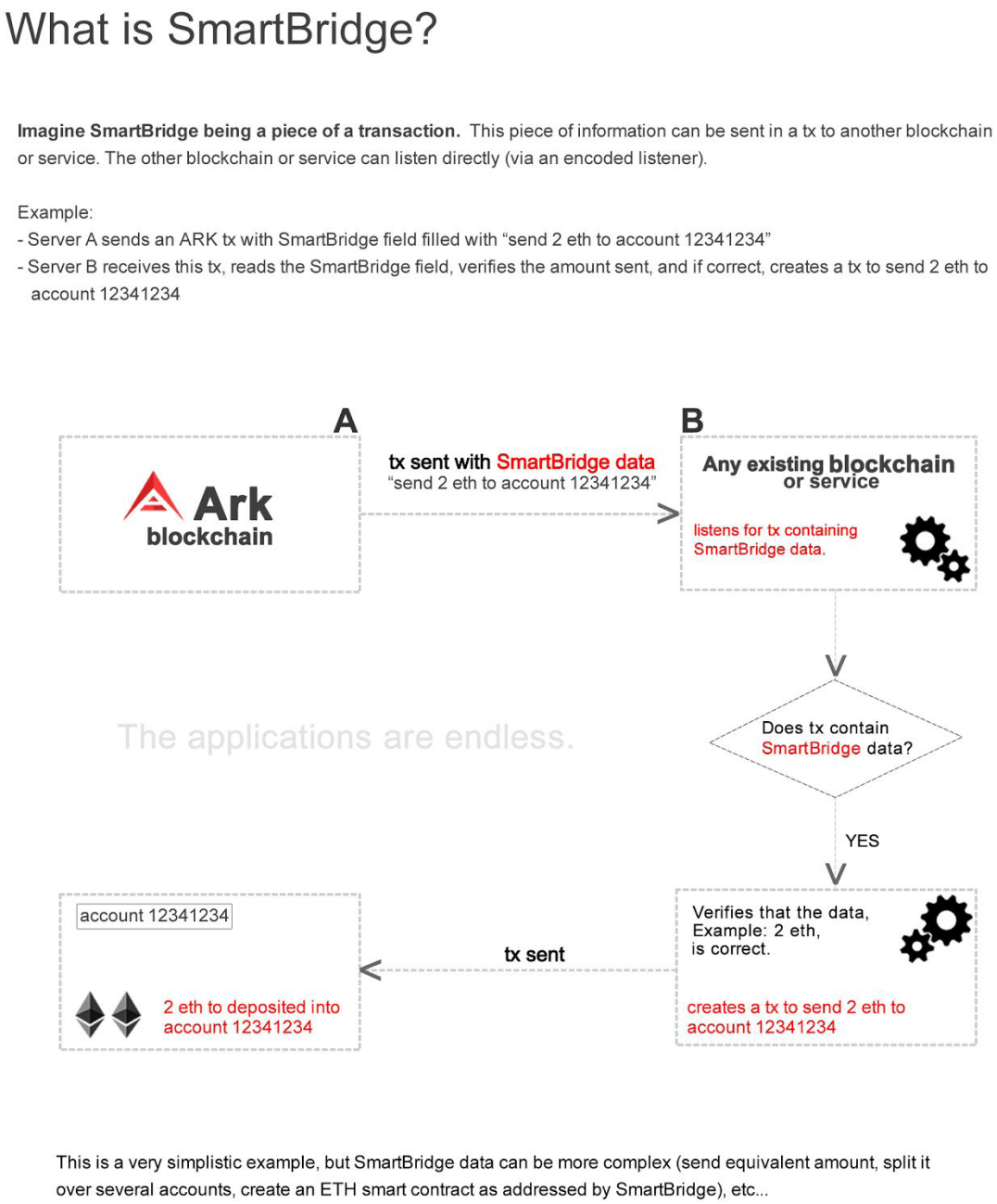


Figure 4.1: ARK SmartBridge Technology

4.5.2 A.C.E.S. - ARK Contract Execution Service

ACES is a blockchain interoperability platform that provides simple protocols and tools for building a robust blockchain service marketplace.

ACES is composed mainly of the following three components:

Listeners ACES Listeners provide a way for all the different blockchain transaction events to be easily consumed via a common REST-ful API. The API allows consumers to create subscriptions and receive blockchain events in real-time using Webhook callbacks.

Services ACES Services create and excute Service Contracts, which can be anything from up-

loading a file to a storage blockchain, performing value transfers, creating smart contracts, executing code on blockchain based computing platforms, or interacting with IoT hardware.

Marketplace Console The ACES Marketplace Console is a consumer dashboard for searching and executing service contracts listed on the Marketplace. ACES Service providers can list their service nodes using the Marketplace API.

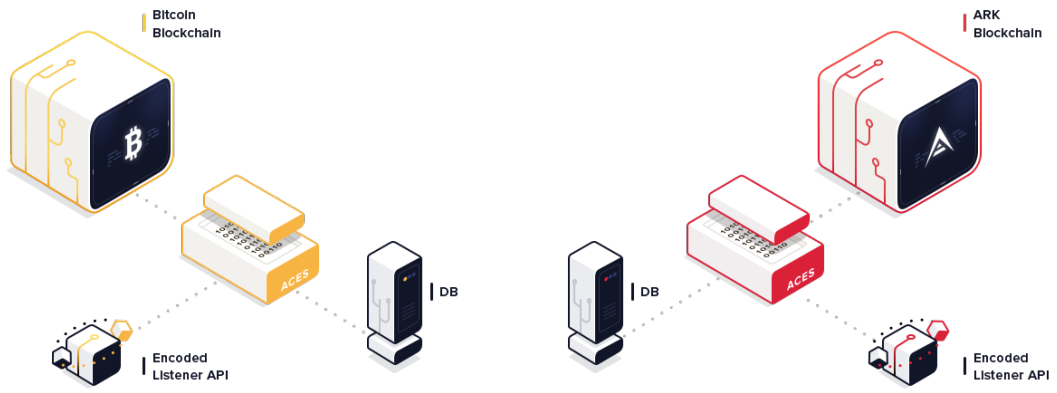


Figure 4.2: ARK-BTC A.C.E.S. SmartBridge Implementation Overview

4.6 Ripa Liquidity Service Provider (R.L.S.P)

Using the SmartBridge technology RipaEx will build a mechanism to share liquidity between all the exchanges in the Ripa network by writing the single exchange orderbook in the Ripa Blockchain and by executing order matching between all exchanges in the network.

In this way you can have the benefits of a decentralized orderbook (like liquidity) with the benefits of a centralized exchange (like platinum customer support and FIAT exchange).

4.7 Ripa Community Fund

To permits the born of new exchanges in the Ripa network a Ripa Community Fund - RCF - is created with the following characteristics:

Starting Principal : the RCF will have a starting operating capital of 5% (5,750,000 ₱) of the genesis block

Recurring Participation : each delegate will contribute to the RCF with 5% of its forged XPXs

To obtain funds from the RCF to start your own Ripa Exchange you will submit your proposal in the official RCF section in the Ripa forum at anytime after the first Ripa Exchange instance will be operative.

5. Token Sale

The RipaEx XPX token sale will be separated into two phases:
PRESALE : that will run from April to August 2018
RIPA TEC : that will run from September to December 2018

5.1 How to Invest

5.1.1 XPX Ripa Token PreSale

5.1.2 RIPA TEC

5.2 XPX Ripa Token Distribution

115,000,000 XPX tokens are seeded into the genesis block: distribution of the XPX tokens generated are described into figure 5.1 and table 5.1.

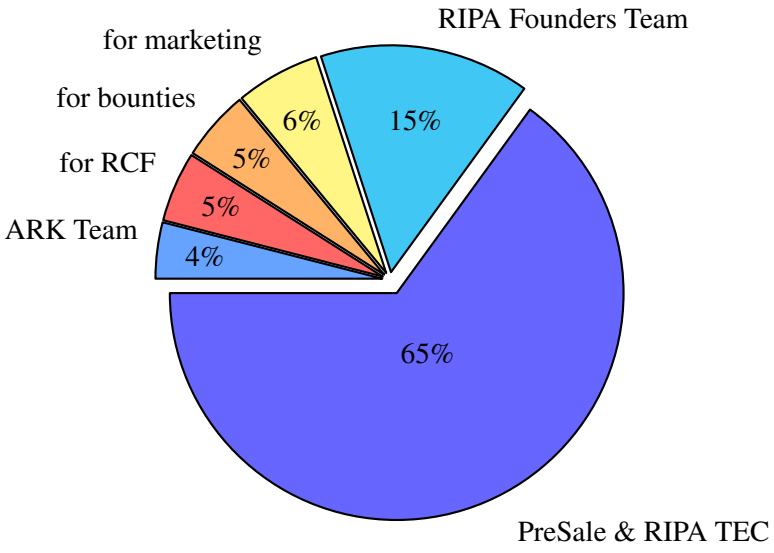


Figure 5.1: Ripa token distribution - Division of funds

Percentage (%)	Quantity (₱)	Purpose
65	74,750,000	to distribute in PreSale and RIPA TEC
15	17,250,000	to the RIPA Founders Team
6	6,900,000	for marketing
5	5,750,000	for bounties
5	5,750,000	for Ripa Community Fund - RCF
4	4,600,000	to the ARK Team

Table 5.1: Ripa token distribution

Tokens not sold during the phases of PreSale and RIPA TEC will be burnt forever to permits and equal distributions of the funds and avoid speculations on the token remaining.

5.3 Division of Funds

The funds collected during the PreSale and RIPA TEC phases will be divided as explained in figure 5.2 and table 5.2 below

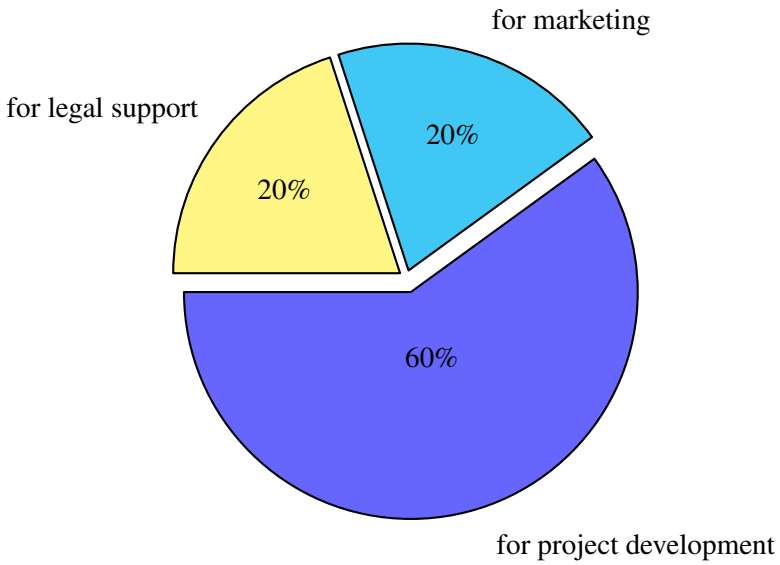


Figure 5.2: Ripa division of funds

Percentage (%)	Purpose
60	for project development
20	for marketing
20	for legal support

Table 5.2: Division of funds

where the row project development funds allocation is described in table 5.3 below.

Percentage (%)	Purpose
55	functional analysis, technical analysis, development, testing
15	infrastructure
10	security
20	technical support

Table 5.3: Project development focus

6. Business Model

7. Team & Conclusion

8. Legal

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