



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 liquidity¹ 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.

¹Thank 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.

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.

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 USD¹ 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 FIAT² 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

¹Coinmarketcap data April 2018

²Traditional 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 <-> CRYPTPO 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	COMPLIANT	TRANSPARENT & CONFIGURABLE
<p>All source code are fully released under the terms of the MIT License.</p> <p>Ripa Exchange is a customizable cryptocurrency exchange solution architecture enables easy connection to KYC/AML, authentication, ETL/reporting, and other services.</p>	<p>International KYC/AML standards.</p> <p>Ripa Exchange KYC efficiently submits and exchanges KYC information to meet the banking supervisory standards and comply with Customer Due Diligence (CDD) requirements.</p>	<p>Customize in your own way</p> <p>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.</p>



3.3 Functional Analysis

3.4 Technology Stack

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**

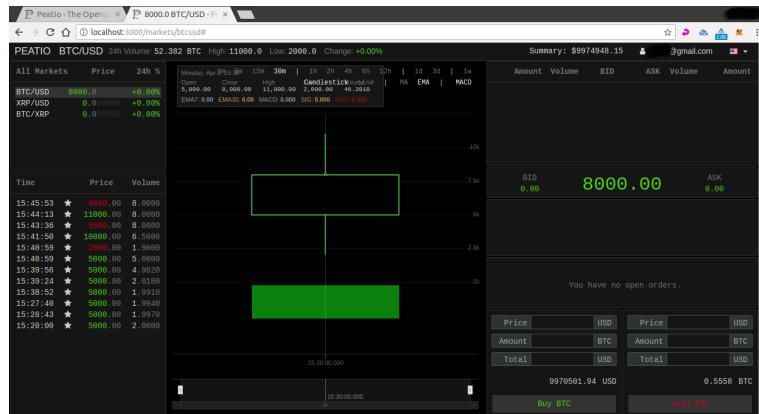


Figure 3.1: Ripa Exchange trading UI

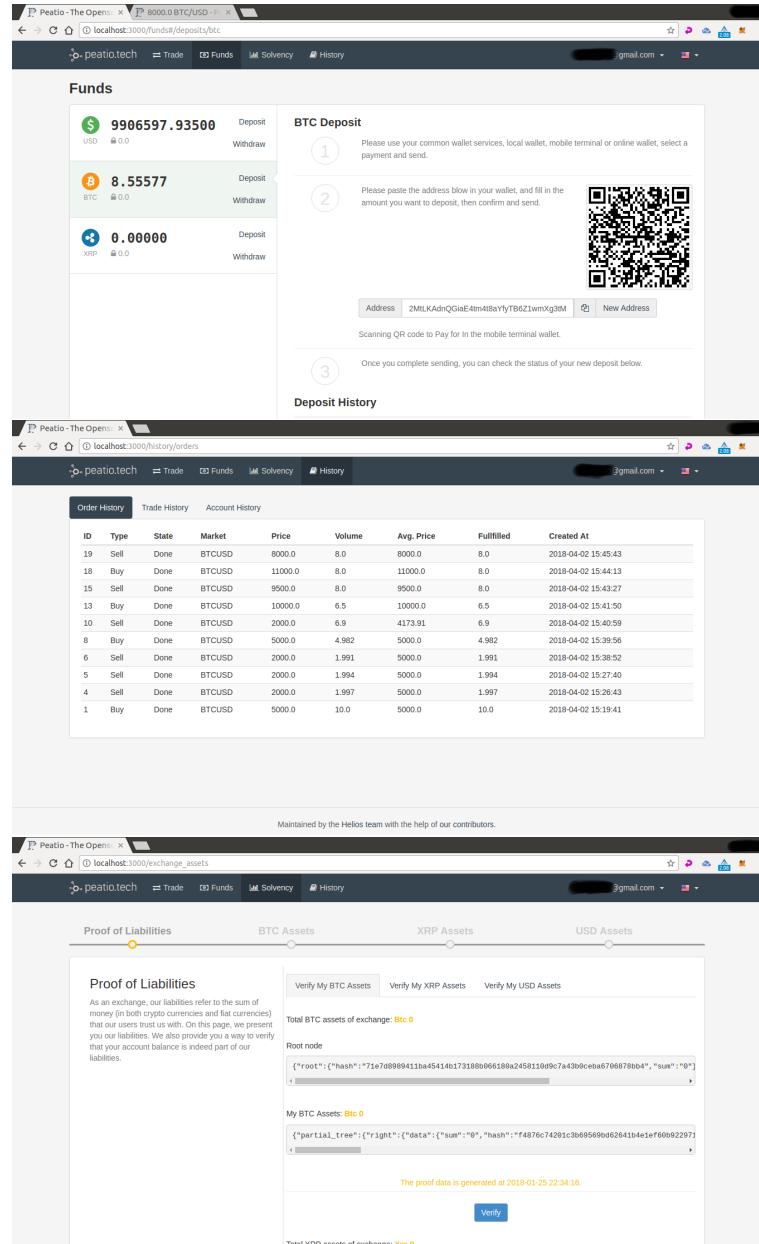


Figure 3.2: Ripa Exchange deposit/withdraw, order history and solvency screen

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 represent the user interface of the final product**

The figure consists of three vertically stacked screenshots of the Ripa Exchange Admin console.

- Top Screenshot (Dashboard):** Shows the main dashboard with sections for Currencies Summary and Exchange Summary. The Currencies Summary table includes columns for Name, Locked, Balance, Sum, Hot-Wallet Balance, and Cold-Wallet Balance. The Exchange Summary table shows Register Count.
- Middle Screenshot (Deposits):** Shows the Deposits section with a table of transaction history. Columns include Txid, Created At, Currency, Member, Amount, Confirmations, and State/Actions. Three transactions are listed, all marked as Accepted.
- Bottom Screenshot (Withdraws):** Shows the Withdraws section with a table titled "Last 24 hours". Columns include ID, Created At, Currency, Account, Bank, Amount, and State and action. Two withdrawals are listed, both marked as Rejected.

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

This screenshot shows the member account details for a specific user. It displays three tabs: Member Info, Account Info : USD, and Account Info : BTC. The Member Info tab shows the email (redacted@gmail.com) and registration date (2018-01-25 22:31:05). The Account Info : USD tab shows the amount (28903.0), frozen (0.0), and balance (28903.0). The Account Info : BTC tab shows the amount (8.36565), frozen (0.0), balance (8.36565), and deposit address (2NA556dmH8Ursv0Ly2UAK3nc5gb522FVp4). A separate Accounts Log tab is also visible at the bottom.

The screenshot shows a web browser window titled "Peatio - The Open" with the URL "localhost:3000/admin/d_documents". The page has a dark header with tabs for "Dashboard", "Verify Account" (which is active), "Proof", "Deposits", "Withdraws", "Members", and "Data Statistics". A "Back" button is in the top right. Below the header is a table titled "Verify Account". The table has columns: id, name, email, Id Document Type, Id Bill Type, Request At, and verified. The data shows 13 rows of account requests. Most rows have a green "YES" button labeled "View" next to the "verified" column. The first row has a red "NO" button labeled "View". The last row has a red "NO" button labeled "View". The table includes navigation links at the bottom: « First, < Prev, 2, Next >, Last ».

id	name	email	Id Document Type	Id Bill Type	Request At	verified
1	[REDACTED]	[REDACTED]@gmail.com	Unknown	Unknown	2018-04-02 15:04:26	NO View
13	[REDACTED]	[REDACTED]@gmail.com	Id Card	Bank Statement	2018-01-25 22:32:11	YES View
2	[REDACTED]	[REDACTED]@monahan.name	Id Card	Unknown	2018-01-25 21:31:10	YES View
3	[REDACTED]	[REDACTED]@weberschulist.biz	Id Card	Unknown	2018-01-25 21:31:10	YES View
4	[REDACTED]	[REDACTED]@ilman.net	Id Card	Unknown	2018-01-25 21:31:10	YES View
5	[REDACTED]	[REDACTED]@baumbachhudson.net	Id Card	Unknown	2018-01-25 21:31:10	YES View
6	[REDACTED]	[REDACTED]@mcglynn.net	Id Card	Unknown	2018-01-25 21:31:10	YES View
7	[REDACTED]	[REDACTED]@collins.info	Id Card	Unknown	2018-01-25 21:31:10	YES View
8	[REDACTED]	[REDACTED]@paucke.name	Id Card	Unknown	2018-01-25 21:31:10	YES View
9	[REDACTED]	[REDACTED]@langworthblick.biz	Id Card	Unknown	2018-01-25 21:31:10	YES View

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



4. The Ripa Blockchain

4.1 Table

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table 4.1: Table caption

4.2 Figure



Figure 4.1: Figure caption



5. Token Sale

5.1 Table

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table 5.1: Table caption

5.2 Figure



Figure 5.1: Figure caption



6. Team & Conclusion



7. Legal



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First printing, March 2018