



WHITE PAPER

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1. INTRODUCTION

The number of fields where blockchain technologies are being applied is expanding at a very high rate. The largest global corporations continue to unite and form associations to study blockchain and integrate it into various economic realms. One such association is The Enterprise Ethereum Alliance¹ that comprises over 500 members, including J.P. Morgan, Intel, Microsoft, IBM, Samsung, and many others. According to Gartner — one of the world leaders in IT market research — blockchain entered the TOP-10 of technological trends in 2018². As an IDC³ report shows, the overall global volume of investments in blockchain solutions has already amounted to \$945 mln in 2017. The number is projected to reach \$9.5 bln by 2021. Many experts maintain that development of this technology will eventually lead to revolutionary shifts in human life.

1.1 IDENTIFYING THE PROBLEM

The expanding opportunities enabled by blockchain technology consistently generate new challenges. The key challenge is how to make ownership of digital assets both convenient and secure. For the time being, this issue remains the most urgent one. The value of cryptocurrencies stolen over the last 5 years has reached over \$1.8 bln. This matter prevents many companies and individuals from adopting cryptocurrencies. In addition, complexity of management of cryptocurrency assets as well as their limited usability in everyday life are also among the most sensitive issues. As a result, cryptocurrencies have yet to fulfill their primary purpose — they do not currently act as the means of payment but are instead used mainly to gain speculative income or are applied in the so-called shadow economy.

1.2 OUR SOLUTION

The mission of XZEN is to create a single secured «key» to all cryptocurrency assets. XZEN is the first cryptocurrency wallet that combines the full functionality of cryptocurrency exchanges, convenience of traditional banking, and security of cold storage. The foundation of XZEN is a cross-chain system, operating on blockchain, and is based on the Graphene⁴ technology. The XZEN system consists of mobile and web applications (XZEN App) as well as a hardware wallet (XZEN Wallet).

1. <https://entethalliance.org>

2. <https://www.gartner.com/smarterwithgartner/gartner-top-10-strategic-technology-trends-for-2018>

3. <https://www.idc.com/getdoc.jsp?containerId=prUS43526618>

4. <http://docs.bitshares.org>

XZEN App is an application with an intuitive and user-friendly control system. It allows access to the entire spectrum of next-generation financial services through a single interface. Such services include:

- Storage of multiple types of cryptocurrencies and ERC-20 tokens
- Instant free-of-charge money transfers
- Favorable terms for exchanging cryptocurrencies into fiat currencies and other types of cryptocurrencies
- P2P lending, investments and other features

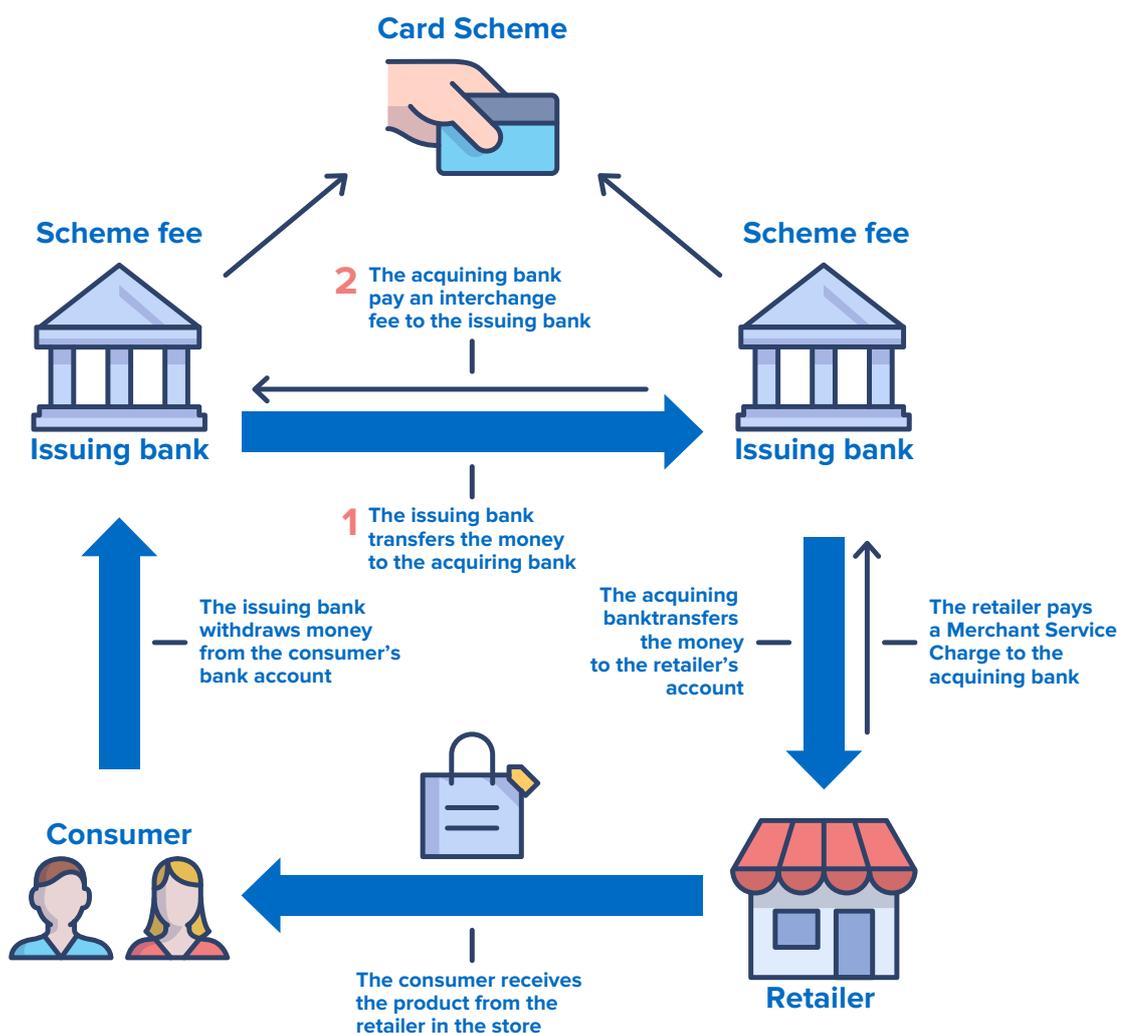
XZEN Wallet is a hardware wallet that could be used along with the XZEN App. The wallet substantially improves safety of cryptocurrency storage. At the same time, the device is simple and convenient to use. The main features of the wallet are:

- Convenient and safe identification via fingerprint reader
- Compatibility with other devices, including smartphones
- High-resolution color touch screen display
- Bluetooth connection support

XZEN's philosophy is not only to push technological boundaries in rethinking and improving existing offerings in the marketplace but to create a completely new and better user experience with unrivaled convenience and security.. XZEN aims to become a one-stop synergetic platform that combines proprietary technological solutions with easy access to current and innovative financial services within the scope of a single system. This will provide users with brand new opportunities and change their perception of financial management. XZEN shall become a smart digital «key» to the economy of the future for millions of people.

2. INTEGRATION OF BLOCKCHAIN TECHNOLOGIES INTO FINANCIAL SECTOR. PERSPECTIVES

McKinsey & Co. experts believe that it is the financial sector that will face the biggest changes as a result of blockchain technology integration. It is one of the most important sectors serving the global economy and processes trillions of US dollars annually. However, the financial sector is also the most conservative and centralized one. It has not been exposed to significant changes for an extended period of time. For instance, when a client engages a POS-terminal with a bank card to pay for a cup of coffee in a restaurant, the client's money passes through several agents before it gets to the recipient's account. The transaction itself takes seconds, but it is possible that a restaurant's owner will only receive his money 5 days after such a transaction takes place.



The field of international money transfers faces similar issues. Settlement of operations within the SWIFT network, which was established back in the early 1970's, could take several days. As such, while it's been a while since money has become digitized, comically enough, we continue to live in a world where it is possible to deliver 1 paper U.S. dollar via DHL anywhere on the planet within 1 day, but a bank transfer could take 3-5 days. «The advent of technology essentially took paper-based processes and turned them into semiautomated, semi-electronic processes, but the logic was still paper based», said Vikram Pandit, former CEO of Citigroup⁵.

The current state of affairs in the financial sector could be improved with integration of blockchain technologies. Blockchain is capable of bringing revolutionary changes to the way the financial system functions as a whole by arranging a direct exchange of value between people. Research dealing with potential blockchain applications shows tremendous potential. Experts of Santander, a Spanish bank, have calculated that the world banks could reduce their costs by \$15-20 bln per year by 2022 with the help of blockchain⁶.

McKinsey's research identifies several areas in the financial sector where application of blockchain has the highest potential:

- International money transfers between individuals

Money transfers, including those sent by foreign expat communities to their homeland, is one of the main areas, which could change drastically due to blockchain. It is a huge market with a volume of \$1.08 trn annually⁷. Today the process of money transfer is a slow and sometimes unsafe procedure. People are forced to waste hours of their time to physically visit offices of companies dealing with money transfers and fill out the same documents every time. In addition to the inconvenience, people are forced

5. <https://www.telegraph.co.uk/finance/financetopics/profiles/9400115/Citigroup-CEO-Vikram-Pandit-lts-about-getting-back-to-the-basics-of-banking.html>

6. <https://www.coindesk.com/santander-blockchain-tech-can-save-banks-20-billion-a-year/>

7. <https://imtconferences.com/estimating-volume-industry/>

to pay high commission fees for the transfers. The average commission fee is 7.09%⁸. The opportunity to use cryptocurrencies globally without the need to visit bank branches and payment companies will allow millions of people to make transfers in mere moments at much lower commission rates instead of several days for execution.

- International commercial transfers

International commercial transfers is one of the most important and profitable sectors of the banking system. The commission rates amount to over \$250 bln annually⁹. Nowadays this area is experiencing particularly heavy pressure given that the pattern of international commercial transfers has not changed drastically for a long time, and is therefore a rather complicated and obsolete mechanism primed for disruption. Such transfers require the use of intermediary banks (which could be numerous) in addition to the sender's bank and the recipients' bank. Each bank in this pattern requires time to process a payment and receives commission for its operations. For the remitter, this means that the sending velocity of international payments is intrinsically hindered and transfer time is very slow. In fact, it could take up to 1 week for the funds to be delivered to the recipient. Furthermore, the banks take outsized commissions amounting to hundreds of dollars per individual transfer. As a result, many companies pay billions of dollars to banks for servicing of foreign trade contracts on a yearly basis. Due to the decentralized maintenance of the payments register and the lack of intermediaries, blockchain can significantly decrease the net cost of such payments, while also increasing velocity and transparency considerably. According to McKinsey & Co. estimates, this area is one of the most perspective ones, where blockchain could create one of the largest markets with the volume of \$40-50 bln per year¹⁰.

8. <https://imtconferences.com/estimating-volume-industry/>

9. <https://www.mckinsey.com/~media/McKinsey/Industries/Financial%20Services/Our%20Insights/Rethinking%20correspondent%20banking/Rethinking-correspondent-banking.ashx>

10. https://www.treasury.gov/initiatives/fio/Documents/McKinsey_FACI_Blockchain_in_Insurance.pdf

- Lending

Over 30% of the population have no access to financial resources. Scoring procedures have long become obsolete and, in most cases, do not allow proper evaluation of a potential borrower's reputation, and creditworthiness. Blockchain technologies will help create a digital identification document where a great deal of data required for obtaining credit could be stored safely. Such data could include information on education and work background, a person's revenues, amounts the person spends and the areas of the person's expenditures. The recording and storage of all such data on the blockchain would considerably reduce the risk of forgery and fraud. Development of P2P lending based on the blockchain will allow lenders and borrowers to interact and communicate with each other directly, thus enhancing the likelihood of a credit's approval as well as reducing the decision-making time significantly.

- User identification, KYC and AML procedures

Existing KYC procedures could take days or even weeks to comply with regulatory requirements. In most cases, many data is input manually and duplicated at various stages. While the compliance expenditures by financial institutions is growing, the efficiency of procedures remains rather low. In addition, financial institutions face excess risks of fraud. Integration of blockchain technologies will result in higher levels of security for data storage compared to the current model. As far as control of the transactions is concerned, access to the data will be faster and easier. Ultimately, using blockchain to integrate KYC procedures will help reduce financial misconduct and crime, while simplifying the process for clients and making it more efficient for financial institutions.

- Trade financing, insurance, over-the-counter market of derivatives and other areas of business

According to McKinsey calculations, integration of blockchain technologies over the course of several years will create a new market with the volume totaling \$80 to \$100 bln per annum¹¹. Confirming this trend, global corporations have invested hundreds of millions into fintech startups. For instance, in 2015, Goldman Sachs has invested into Circle — a cryptocurrency payments technology and liquidity — providing «OTC» trading company — which has recently bought Poloniex — one of the largest cryptocurrencies exchanges — for \$400 mln¹². Sberbank, the largest Russian bank, has established a \$100 mln crypto fund, and declared that «a modern system where 10,000 banks are busy with money transfers, can be replaced with the blockchain¹³».

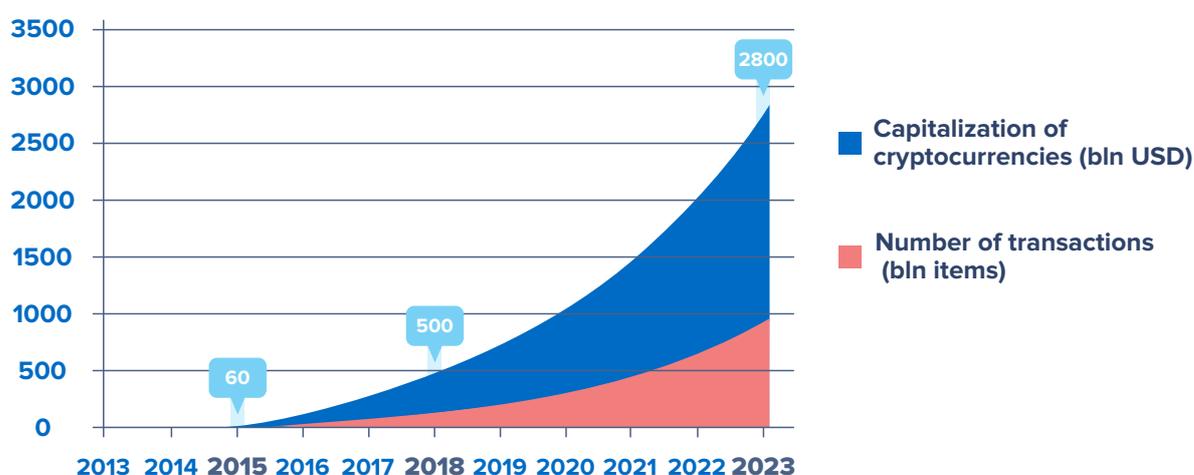
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11. https://www.treasury.gov/initiatives/fio/Documents/McKinsey_FACI_Block-chain_in_Insurance.pdf
 12. <https://www.bloomberg.com/news/articles/2018-02-26/goldman-backed-circle-buys-digital-exchange-poloniex>
 13. <https://www.coindesk.com/sberbank-blockchain-investments/>

3. CRYPTOCURRENCIES. MARKET CONDITIONS AND DEVELOPMENT PROSPECTS

Cryptocurrencies hold an essential position among blockchain developments. They can be used both as an instrument of value preservation and for transfer of funds as well as for payment for goods and services. As little as 5 years ago only a small number of people knew about cryptocurrencies, but nowadays many world leaders voice their intentions to create a national cryptocurrency. Case in point, Venezuela's government issued the «petro» — the world's first national cryptocurrency — in February 2018¹⁴.

3.1 CRYPTOCURRENCY MARKET. STATUS AND DYNAMICS

Consolidated indicators of cryptocurrency market



According to McKinsey & Co. analysis, capitalization of all cryptocurrencies will amount to approx. \$3 trillion by 2023, thus increasing in value 10 fold from current levels. As the above diagram shows, the total capitalization was about \$20 bln back in 2015, and, at the time of writing, this number is \$376 bln¹⁵. The average growth over the last 2 years has been to 412.5% per year. Considering this growth rate, capitalization could exceed \$1 trillion as early as in 2020.

14. [https://en.wikipedia.org/wiki/Petro_\(cryptocurrency\)](https://en.wikipedia.org/wiki/Petro_(cryptocurrency))

15. <https://coinmarketcap.com>

The quantity of transactions using cryptocurrencies has grown substantially along with the growth of total capitalization — in fact, usage of cryptocurrency, as tracked by transaction activity, has grown nearly inline with capitalization expansion. As such, the number of transactions has grown from over 8 bln to over 63 bln since 2015, i.e. the average growth rate was around 393% per year.

Understandably, increasing adoption of cryptocurrencies overall and resulting growth in the number of pertinent transactions is very important for the XZEN Project, because it is directly correlated with the growing need for cryptocurrency wallets, and therefore with an expanding userbase of XZEN. A 4-time historic annual average increase in the amount of transactions corresponded to a commensurate increase in commission fees, which we consider an attractive indicator. At this size, the market already presents a substantial fundamental basis for development of XZEN, and we believe crypto adoption as well as transaction volume will continue to grow, which would make our products a compelling value proposition.

3.2 TOKENS: DESCRIPTION, ADVANTAGES AND PERSPECTIVES

Tokens are a special type of crypto assets. Their main difference from cryptocurrencies lies in the fact that they are a programmable plugin to the existing blockchains, and are not created on their own blockchain. One of the most widespread standards of tokens is ERC-20, which are created on the Ethereum blockchain. The main advantage of tokens is their ability to give a great variety of rights and privileges to their owner. Despite their variability and potential complexity, it is rather easy to create such tokens. Thanks to this the tokens have gained enormous popularity both among companies and investors. Over 650 of such tokens have been issued so far, and their total capitalization exceeds \$26 bln, according to Coinmarketcap.com.

As of today, 90% of the issued tokens are utility tokens. However, both asset tokens and security tokens have great perspectives as well. In the short run they can become an effective instrument for asset management. As some experts estimate, the traded

13/ value of asset tokens could amount to \$4 trillion¹⁶ by 2025. Development of security tokens is hindered by gaps in legal regulation and rigorous regulatory requirements facing issuers. Nevertheless, experts predict that, in the near future, conventional equities will begin to be issued on the blockchain (or get «tokenized»). Considering the tremendous total capitalization of all stocks, which amount to \$66.5 trillion¹⁷ in 2014, the trading volume could be in the trillions of dollars in a few years following the issuance of the first stocks on blockchain begins.

16. [https://cdn-new.latoken.com/common/files/whitepaper/latoken-whitepaper-en.pdf?
_ga=2.188889515.1039497536.1521537642-232494363.1521537642](https://cdn-new.latoken.com/common/files/whitepaper/latoken-whitepaper-en.pdf?_ga=2.188889515.1039497536.1521537642-232494363.1521537642)

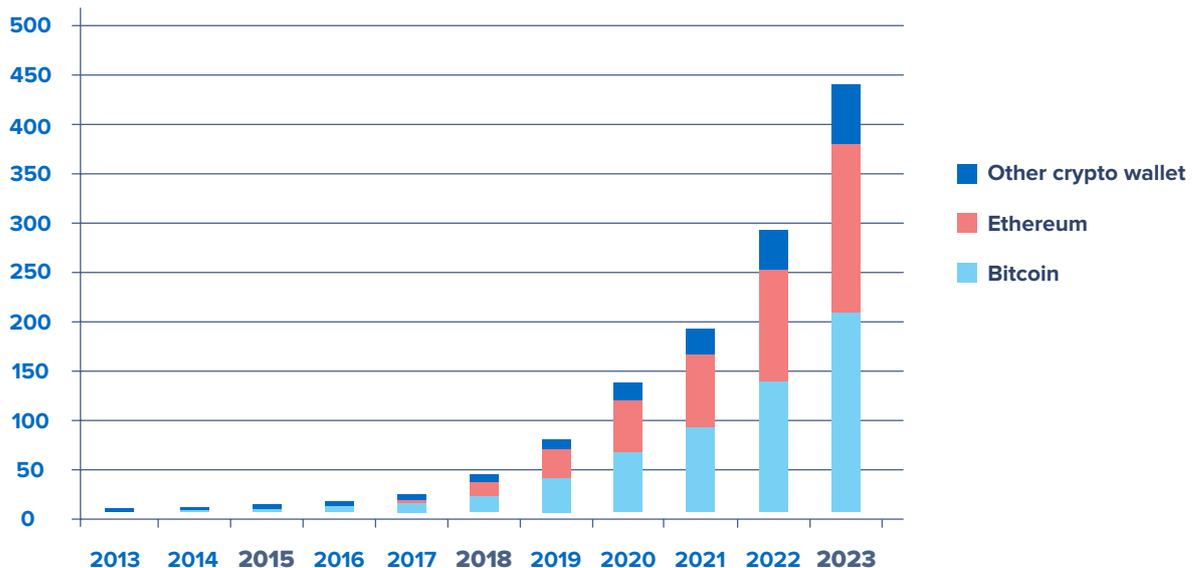
17. [https://www.ftportfolios.com/Commentary/MarketCommentary/2014/10/21/u.s.
-equities-share-of-total-global-market-capitalization-is-growing](https://www.ftportfolios.com/Commentary/MarketCommentary/2014/10/21/u.s.-equities-share-of-total-global-market-capitalization-is-growing)

4. MANAGING CRYPTO ASSETS. THE TOOLS

4.1 REVIEW OF THE MARKET OF CRYPTOCURRENCY WALLETS AND DEVELOPMENT PERSPECTIVES

An obligatory condition or the so-called «entry point» to begin using cryptocurrencies is a cryptocurrency wallet. With the increase in the number of cryptocurrencies as well as their overall wider adoption, the number of cryptocurrency wallets has also grown. In 2015, there were only 2.71 mln wallets, and, by the beginning of 2018, the number of wallets has reached 48.4 mln units.

Estimates of growth of cryptocurrency wallets quantity till 2023



As of the end of March, 2018, 23.7 mln users are registered on the Bitcoin network¹⁸. The number of users has continued to grow 2.65 times annually for the last 3 years. There are 30 mln unique addresses registered on Myetherwallet so far¹⁹. Only in 2017, the number of registered wallets in this network has grown from 940 thousand to 17.9 mln units.

18. <https://blockchain.info/charts/my-wallet-n-users?timespan=all>

19. <https://etherscan.io/chart/address>

A considerable increase in the number of cryptocurrency wallets is also observed at the cryptocurrency exchanges. For instance, the number of Coinbase users has reached 13.3 mln people as of the end of November, 2017 — this is a 10-time increase since 2015. In 2017 alone, their userbase tripled²⁰. A similar trend is observed at other exchanges²¹. As a result, a few large-scale exchanges, including Bittrex, Bitfinex and CEX.io, had to put new user registration on hold in December 2017, because they could not cope with the tremendous inflow of new clients.

Demand for hardware wallets is no less feverish. Ledger has declared that their sales of hardware wallets have grown 33 times in 2017 and reached 1 mln units sold²². Moreover, the demand is so high, that the company was struggling to cope with the production volume. If ordered at the official website, the wallet's delivery time exceeded two months. And this status remains unchanged for half a year at the very least²³. The areas of application are constantly expanding for blockchain technologies, which is a growth driver for cryptocurrency wallet usage and enables great opportunities for evolution of the market. By some estimates, the potential number of wallets could grow 10 times and reach 450 mln units by 2023.

XZEN is creating a universal hardware wallet that will combine unprecedented functionality and allow users to perform operations within the limits of a single application. Our analysis showed that over 34.5% of users are not completely satisfied with the quality of services that they currently get from their hardware wallets. By resolving such problems currently existing in the market, XZEN strives to occupy 5% of the market by 2020. This would correspond to 10 mln active users of the mobile application and sales of 100,000 pieces of the hardware wallet annually by 2020.

20. <https://www.theatlas.com/charts/HJ9DJ0cgz>

21. <http://www.businessinsider.com/crypto-exchanges-are-shutting-out-new-users-because-they-cant-keep-up-with-demand-2017-12>

22. <https://techcrunch.com/2018/01/18/ledger-raises-another-70-million-to-become-the-leader-in-cryptocurrency-hardware-wallets/>

23. <https://steemit.com/cryptocurrency/@faraicelebr8/ledger-no-no-or-be-prepared-to-wait-more-than-2-months-for-your-ledger-nano-s-to-be-shipped>

4.2 KEY PROBLEMS IN THE MARKET

4.2.1 SECURITY PROBLEMS

The security problem is one of the bottlenecks that hinders development and usage of cryptocurrencies. For instance, cyber criminals have stolen over \$1.8 bln since 2014. As late as in January 2018, Coincheck, a Japanese exchange, lost \$500 mln due to cybercrimes²⁴. A few more examples: \$32 mln was stolen from Parity; \$7.4 mln — from Coindash in 2017; \$72 mln — from Bitfinex in 2016; \$5.1 mln — from Bitstamp in 2015, and \$473 mln — from Mt.Gox in 2014.

Cryptocurrency thefts since 2014



In total stolen

>1 800 000 000 \$

A separate, vast segment of fraud in the world of cryptocurrencies is theft during ICO procedures. \$225 mln have been stolen within just 9 months in 2017, during ICOs²⁵. It should be noted that the total amount of funds raised was \$1.6 bln during that time period, meaning the criminals stole every 10th invested dollar.

24. <http://fortune.com/2018/01/31/coincheck-hack-how/>

25. According to Chainalysis, a company analyzing transactions and anti-money laundering <https://blog.chainalysis.com/the-rise-of-cybercrime-on-ethereum/>

4.2.2 LOSS OF ACCESS TO WALLETS

The fear of theft forces users to apply tightened security measures that could themselves prove to be a threat in many cases. Because most wallets cannot hold all types of existing cryptocurrencies, most users are compelled to have several different wallets to store different types of cryptocurrencies or change one currency to another for storage. Naturally, the more wallets a user has, the more hassle is involved in operating them — storage of their access passwords becomes more complicated, etc. As a result, there have been numerous cases where a user accidentally loses access to their wallet. According to Forbes, the total amount of funds stored in wallets with lost access equals to approx. \$21 bln as of this writing²⁶. Objectively, this is an enormous amount equaling 10% of the entire cryptocurrency capitalization.

4.2.3 COMPLEXITY OF CRYPTO ASSET MANAGEMENT

Nowadays more and more people, not related to the financial or IT world, have began to show interest in cryptocurrencies. It is highly important for them to get a clear and easy to understand view on asset management, but a considerable number of new and would-be users continue to face difficulties. This is a critical issue that hinders development of blockchain technologies application.

One of the current major problems is a necessity for a person to use numerous services designed for specific tasks when performing a transaction. For instance, if a user would like to participate in an ICO, such user must perform about 10 operations which could take several hours to complete. We believe universal products with a simpler and more intuitive interface are required to allow mass distribution of cryptocurrencies.

4.2.4 COMPLEXITY OF CRYPTOCURRENCY TRANSFER

While a great deal of breakthroughs are expected in the financial world with the integration of blockchain technologies, even the cryptocurrency transfers still feel like time travel to a distant past. Transfer of funds using existing tools is a very clumsy process. Payments could take considerably longer than expected to get to the destination and commission rates are still high.

26. According to Forbes: <http://www.forbes.ru/tehnologii/351153-poteryannye-sokrovishcha-kuda-propali-bitkoiny-na-neskolko-milliardov-dollarov>

High cost. Oftentimes it costs quite high a lot to send a payment on different networks, thus significantly limiting their usability for small-scale transfers. For instance, the maximum commission for the transfer of \$1 on the Bitcoin network once reached \$55²⁷.

Low transaction velocity is another problem of various networks. If a network is overloaded, a transfer could take up to several days. Ethereum network faced such a problem not so long ago — in December 2017. At that time, the launch of the Cryptokitties application led to tremendous overload of the network, resulting in the increased (seven times higher) number of «still in process» transactions — from 2 to 15 tsd²⁸.

Complexity of transfer. Since an address of a blockchain wallet is comprised of several dozen alphanumeric characters, it can be tricky for people to verify it, so it is prone to human error. Such verification complexity raises the risk of sending funds to the wrong address, and the fact that it's impossible to cancel a transaction makes this a serious problem.

4.2.5 LIMITED USE IN EVERYDAY LIFE

Currently, cryptocurrencies are used mainly as an investment tool to gain speculative income but not as a means of payment. Nevertheless, high velocity and modest cost of transactions are among the key theoretical advantages of blockchain technologies, which is why many believe that we will witness a roaring development of cryptocurrencies as a payment instrument in the nearest future. Payments with cryptocurrencies have already been legalized in the USA, Switzerland, Japan, Germany, Croatia, Singapore, and several other countries. We expect the number of such countries to grow every year.

27. <https://bitinfocharts.com/comparison/bitcoin-transactionfees.html#6m>

28. <https://themerkle.com/cryptokitties-is-clogging-the-ethereum-network/>

5. XZEN – A CRYPTOCURRENCY WALLET

5.1 GENERAL DESCRIPTION OF XZEN CRYPTOCURRENCY WALLET



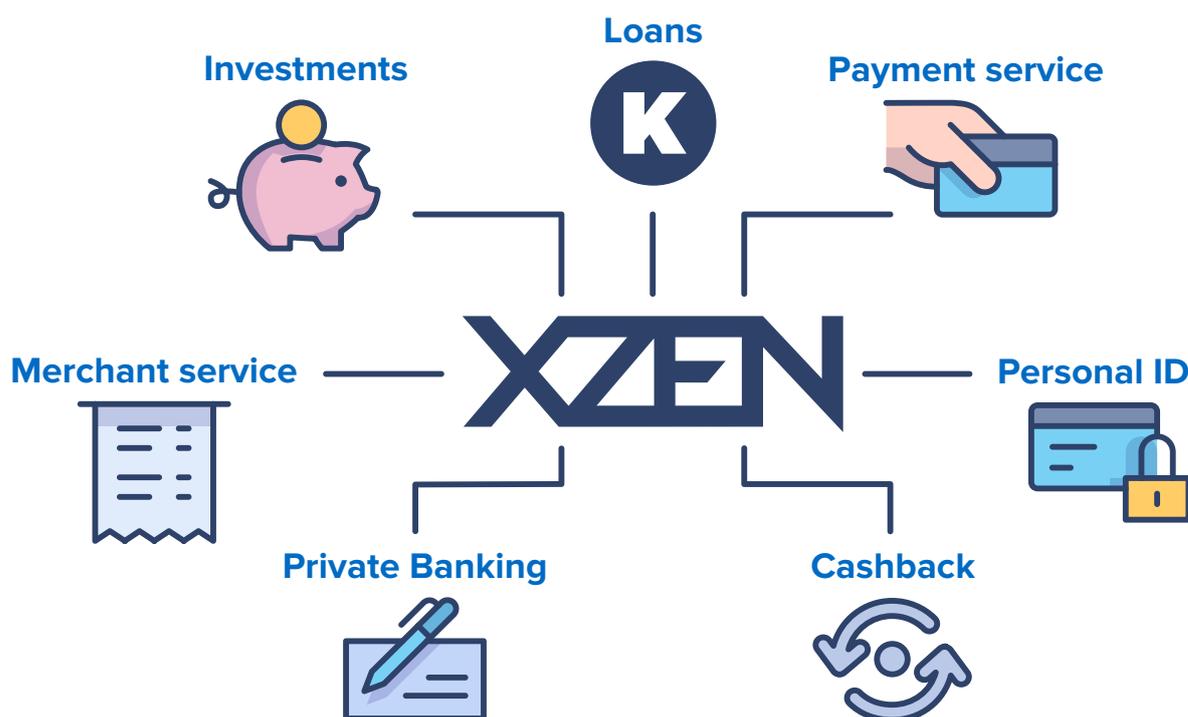
Our analysis of the market and key competitors showed that a strategy that focuses only on a single vital parameter — either security or functionality — has numerous disadvantages and is intrinsically flawed. This is the reason why XZEN decided to develop a full-fledged proprietary ecosystem where the following components will coexist and interact:

- Mobile and web application (XZEN app), which will ensure maximum functionality and comfort for everyday use
- Secured hardware wallet (XZEN wallet), which will provide safety of cold storage and be a complement to XZEN app

This approach is new for the market and holds a great number of advantages for users. As such, XZEN will become the first cryptocurrency wallet combining functionality of exchanges, convenience of traditional banking, and security of cold storage.

5.2 MAIN FEATURES OF XZEN APP

A fundamental feature of XZEN, which makes it distinct from existing products, lies with a brand new philosophy — a universal «key» to all assets and services. On the outside, the device is physically streamlined and easy to use with a single interface, allowing easy and convenient access to numerous financial services. However, inside, XZEN features a complicated software architecture that innovatively combines various technologies. At the core lies one of the most cutting-edge and fastest blockchains — Graphene —, thanks to which XZEN will become an aggregator and unite both the proprietary innovative tech developments as well as the most advanced financial services in the market. The combination of Graphene blockchain and third-party services within a single interface will create a unique product and provide users with entirely new opportunities.



5.3 FUNCTIONAL CAPABILITIES OF XZEN APP



Multicurrency

Storage of the most popular cryptocurrencies and ERC-20 tokens



Free instant transfers

Money transfers with no commission.
Convenient transfers using a unique system name



Internal conversion of cryptocurrencies

Convenient and safe exchange of cryptocurrencies at a favorable rate within the wallet



Purchase and sale of cryptocurrencies for fiat currencies

Conversion of cryptocurrencies to fiat currencies and vice versa at minimum commission rate



Token shop

Platform for launching an ICO.
Purchase of tokens in just a few clicks



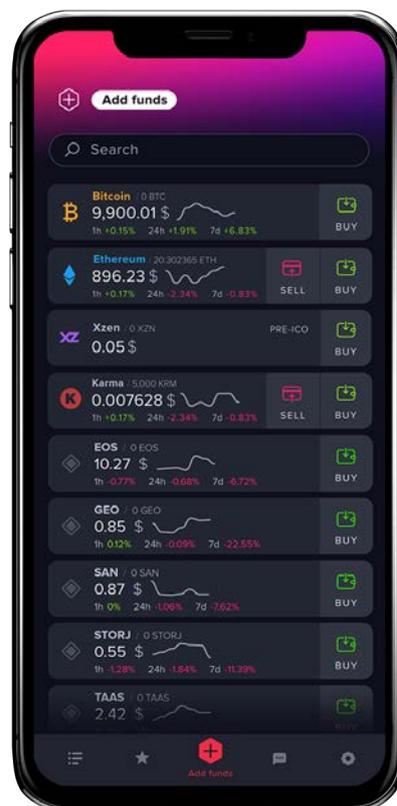
Lending

Access to all advantages of p2p lending for investors and borrowers



NFC payments

The possibility of NFC payment for goods and services around the world



5.3.1 MULTICURRENCY

In the realm of fiat money, a user typically interacts with one or several currencies. The emergence of cryptocurrencies has drastically changed this dynamic. There are over 1,500 crypto assets today. One of the key issues to be resolved by the XZEN system is the provision of a convenient and safe management of a portfolio, affording the potential to hold several dozen crypto assets. XZEN wallet's unique feature is its support of a great variety of cryptocurrencies enabled by the wallet's proprietary blockchain.

When developing the XZEN wallet, we paid huge attention not merely to the software component but also to the creation of a convenient and intuitive interface. A designated multifunctional «Portfolio» screen was developed to ensure convenient analysis and monitoring of the portfolio. This page allows the comparison of charts and earning capacity of various assets within different periods. To simplify navigation through the various assets, XZEN wallet has a system of color coordination and an intuitive upward and downward swiping functionality. All this has been carefully designed to remove complexity from the user experience so any person with any level of knowledge and experience could quickly begin to use the wallet intuitively.

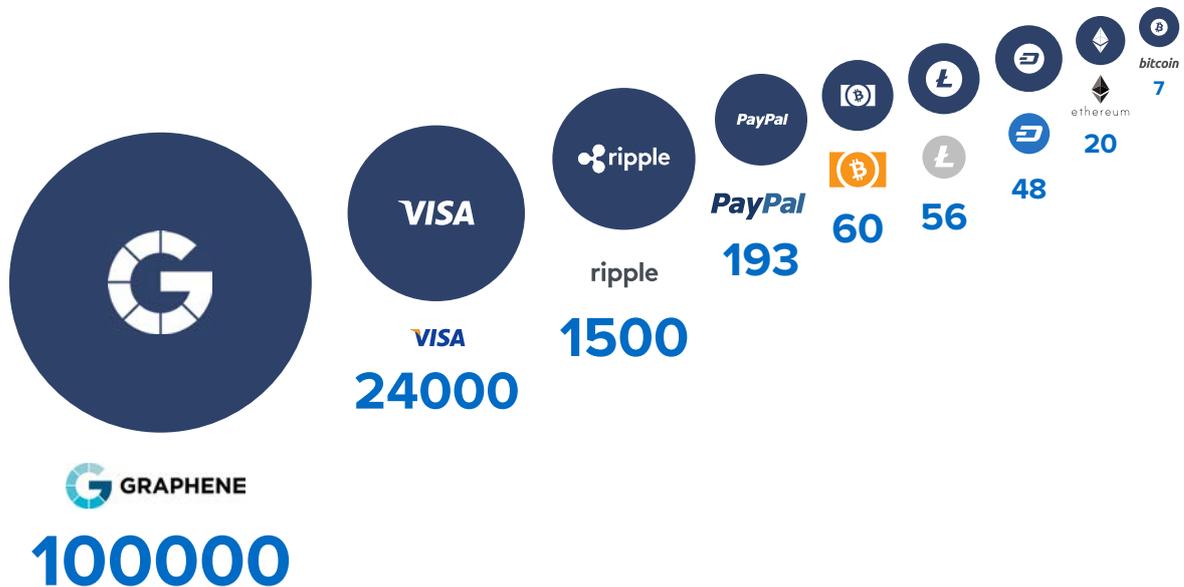
5.3.2 CONVENIENT MONEY TRANSFERS

XZEN cryptocurrency wallet is one of the first-ever services that will allow to transfer funds quickly, easily and conveniently. To make it happen we use a proprietary blockchain based on Graphene — one of the fastest and most current blockchains. It allows performing 100,000 transactions per second, and the time required for clearing a transactions is just a fraction of a second²⁹.

29. <https://bitshares.org/technology/industrial-performance-and-scalability/>

Cryptocurrencies Transaction Speed Compared to Visa & PayPal

Transactions per second



The XZEN system offers brand new opportunities in the sphere of money transfers:

- Zero cost transfers within the system
- Transfer of any currency within the system is instant. Clearing takes a fraction of a second
- One can send a payment in just a few seconds by choosing a recipient from a record book
- To simplify operation and help avoid accidental errors, we have made it possible, in addition to using a typical and long crypto wallet account address, to verify the intended address by and send a payment to a unique ID name or number of the recipient and the recipient's account picture. This feature significantly reduces the risk of sending payment to the wrong address

All these advantages make XZEN a convenient financial tool, which differs fundamentally from the products currently existing in the market.

5.3.3 INTERNAL CURRENCY CONVERSION

One of the main tasks related to management of cryptocurrencies and tokens is making their exchange safe and quick. Currently, not much attention is being paid to this matter even though risks do exist, related to the necessity of entrusting third parties and organizations the management of financial assets and private data.

XZEN wallet will resolve this issue with the help of an automated decentralized exchange within the wallet. It is fast, convenient, safe and does not require transmission of private data. As a matter of fact, we will implement the functional capabilities akin to those available at cryptocurrency exchanges. This will considerably increase security of transactions and make them convenient and cost-effective for users.

5.3.4 BUYING AND SELLING CRYPTOCURRENCIES FOR FIAT CURRENCIES

Nowadays only a few exchanges provide the «entry point» service of buying cryptocurrencies for fiat money. Not a single popular wallet has such functionality. This serious nuisance can often preclude people from entering the crypto space and actually bears extra risks for users because of the unscrupulous intermediaries. In addition, the commission rates for purchasing cryptocurrency can reach 12%.

Therefore, one of the key issues the XZEN team continues to work on is implementing the fiat-to-cryptocurrency conversion feature within the wallet. XZEN wallet will become one of the few services that will allow users to convert fiat into cryptocurrency and vice-versa easily, quickly and on favorable terms.

5.3.5 INVESTMENT

An important mission of XZEN is to provide users with maximum capabilities in the investment sphere. To make this a reality, we're creating an infrastructure within the XZEN wallet to ensure convenient and safe interaction between investors and those aiming to fundraise with ICO projects.

Convenience. Currently, a potential retail investor must perform numerous operations, which are inconvenient and carry their own risks, to participate in an ICO. As an example, a typical ICO investor must:

- Buy or change cryptocurrency
- Create a new wallet with particular support of the ERC-20 token in question
- Undergo a KYC procedure
- Transfer funds to a special-purpose address of a smart contract and wait for the tokens to arrive
- Add tokens by entering specific data

This is a complicated and time-consuming procedure that can take several hours. The advantage of XZEN is a proprietary system and elaborated interface, which will allow investor users to perform all these operations easily and conveniently within a single application. XZEN wallet's ability to support numerous currencies and ERC-20 tokens gives the projects/ investors an opportunity to receive/place money in any currency they prefer, including fiat currencies. At the end of the day, a user will simply have to choose an ICO, the currency to use, and the amount he/she wishes to invest. All the rest will be done automatically by the system in just a few seconds.

Security. In the ICO investment procedure, the current standard system used for publication of a smart contract's address on a website is highly vulnerable. Since there is no way to verify neither the legitimacy of the ICO website nor the correctness of a smart contract's address (which is a combination of alphanumeric characters that is difficult to analyze and compare), there are considerable risks both for investors and for companies holding ICOs. As a result, a huge amount of money, equaling around 10% of all invested funds, has been stolen.

XZEN will implement a feature of buying new tokens within the wallet, which will resolve fraud issues related to ICO investments. We will embed a special system for reconciling the entered smart contract address with the official address provided by the company holding

an ICO. If the two addresses do not match, the system will notify the user of a potential address security issue and the threat of fraud. This procedure will be fully automated and transparent. It will considerably simplify and secure interaction between the investor (XZEN user) and ICO companies.

Identification. One of the main tasks during an ICO for both the investors and the projects is to comply with AML requirements and KYC procedures. Companies, which encounter all these issues for the first time, experience a great deal of complexity since regulatory requirements vary widely depending on the investor's domicile and national identity. As for the investors, they must undergo this same procedure repeatedly for each ICO. On top of all, requirements of different projects may vary. XZEN pays special attention to the creation and development of XZEN Blockchain Identity Service, our blockchain-based private data storage system. This will create a comprehensive, fully-compliant, wholly legal, and, most importantly, very streamlined portal for investors. In turn, the ICO projects will be able to quickly and confidently meet their investor KYC/AML needs with the help of XZEN infrastructure, thus saving their own and their investors' resources.

5.3.6 LENDING

Lending is one of the most popular services among traditional banks. The advent of blockchain technology has allowed investors and borrowers from all over the world to connect with each other directly. Investors get the opportunity to realize a rate of return several times higher than typical deposit rates; borrowers obtain access to foreign capital as well as the ability to simplify and considerably accelerate the procedure of securing a loan.

All these advantages will be available to XZEN users. In developing a multifunctional, innovative financial platform, the XZEN Project will include a P2P lending service.

The application's users will be able to obtain a loan and/or lend money within a couple of minutes. We plan to develop this service with the help of our partner — Karma Project³⁰.

30. www.karma.red

5.3.7 PAYMENT FOR GOODS AND SERVICES

This function will allow cryptocurrency users to have numerous real-world payment options to help the realms of crypto and fiat currencies to truly interact. By means of an embedded NFC chip, over 36 mln points-of-sale in 200 countries all over the world will be available to our users to purchase goods and services.



560 mAh battery



CPU with internal encryption



3rd generation fingerprint scanner



Connection via USB Type-C and Bluetooth 4.2



Steel case



NFC chip for contactless payments



2.4" 320 × 240 IPS display

5.4 FEATURES AND TECHNICAL SPECIFICATIONS OF XZEN WALLET

5.4.1 FEATURES OF XZEN WALLET

All hardware wallets currently available on the market focus primarily on security issues, and rightfully so, but seem to completely ignore ease of use. For instance, most of such wallets do not support interaction with mobile devices. Moreover, if a person only owns Bitcoin and wishes to send Ethereum, the first thing he/she will have to do is send Bitcoin to an exchange to get Ether. Only after this third party operation will it become possible for him/her to send the intended currency. As a result, it is cumbersome to use existing hardware wallets on a regular basis; they are more fit for long-term storage of assets with minimum usage.

XZEN's value proposition lies not merely in a hardware wallet of superior-build quality, carrying premium security and physical features. We differentiate ourselves by employing the safest technology available — «cold» storage — while also completely re-imagining what this type of device could and should do, making it more useful, easier to operate, and updating it with all the latest technology both inside and out. We firmly believe that when a user buys a storage device, no additional problems and frustrations should come with it. On the contrary, we wish for our hardware wallet to simplify the user's very interaction with cryptocurrencies.

The XZEN hardware wallet is a unique device on the market due to many innovative features, including:

- Compatibility with any device, including smartphones

This function will allow cryptocurrency users to have numerous real-world payment options to help the realms of crypto and fiat currencies to truly interact. By means of an embedded NFC chip, over 36 mln points-of-sale in 200 countries all over the world will be available to our users to purchase goods and services.

- High-resolution LCD display for convenience and clarity

Most current hardware wallets have a tiny display with bad resolution, which is not only uncomfortable for use, but also carries an additional legibility risk. Optically, it is rather difficult to check a 42-symbol account number on such a display. As a result, there is a higher risk of overlooking a «false» account and potentially sending funds to the wrong or even fraudulent address. XZEN wallet is equipped with a high fidelity, high resolution color LCD display that makes it easy to check a recipient's account number and a plethora of other pertinent information. Moreover, one can see a photo of any recipient registered on the system for added security and convenience.

- Convenient and safe identification via fingerprint reader

The user him/herself is a key to his/her wallet with the latest generation of biometric security technology. If one uses the wallet frequently, the fingerprint reader helps avoid having to input a pin-code again and again. Even if the wallet is rarely used, the user no longer has to fear forgetting the pin-code and losing access to funds. At any time, the user can access the wallet by simply scanning his/her finger.

- Support of Bluetooth connection

Carrying a cable around isn't exactly comfortable or convenient and it can easily get misplaced. More importantly, a situation could invariably arise where you are on the run and must make an urgent payment, and the multi-step process of connecting a hardware wallet with a computer/smartphone via a cable could become more than just a convenience issue. XZEN hardware wallet's ability to connect to the application via Bluetooth (XZEN wallet also has a USB Type-C port) ensures the user's maximum mobility under any circumstances.

- Access to all assets with a single application

The operating principles of most of the existing crypto assets stipulate that every one of them requires the installation of a separate application. It's inconvenient and considerably complicates management of a portfolio consisting of several assets. XZEN wallet's core operation is based on access to a single application where one can store a great number of various crypto assets. A user can easily check his/her assets, transfer any of them or change one into another. At the same time, the maximum level of security is maintained because all transactions must be physically «signed» by the XZEN hardware wallet.

5.4.2 TECHNICAL SPECIFICATIONS OF XZEN WALLET



- Li-Pol battery with the capacity of 560 mA*h
- Fingerprint scanner FPC1020AM (manufactured by Fingerprint Cards AB, sensor resolution is 192 x 192 pixels, density 508 dpi). This scanner is widely recommended for protection of mobile devices, mobile payments as well as access to cloud services

- LCD display 2.4" (manufactured by SHENZHEN STARTEK ELECTRONIC TECHNOLOGY CO. LTD, resolution 320 × 240 pixels [262 tsd display colors])
- Protected processor i.MX 6SoloLite, manufactured by NXP. This high-performance system is built on a chip with 1 GHz Arm® Cortex®-A9 CPU. It also includes a 2D graphics acceleration module (OpenVG™ 1.1), that ensures hardware acceleration for rendering of text, lines and images. This chip is designed for use in security devices and equipped with protection against decapsulation. It also features hardware implementation of several encryption algorithms, which allow to encrypt data faster and safer
- USB 3.0 Type-C
- Bluetooth module CC2564MODx, manufactured by Texas Instruments. This chip provides the best specifications in the class (TX Power, RX Sensitivity, Blocking). At the same time, it has a very low power consumption, allowing the wallet to operate for an extended period of time. This chip was specifically designed for mobile devices and has FCC, IC and CE certifications
- NFC chip TRF7970A (manufactured by Texas instruments, supports all three operating modes of NFC, data transmission rate — up to 848 kbps)
- Casing is made of electropolished steel and high-quality plastic

5.5 XZEN CYBER SECURITY – A SECURITY SYSTEM

To ensure the highest level of security and safety of assets within the XZEN wallet, we have developed a proprietary security system called XZEN Cyber Security. We use the world's best protection practices such as layered security, multi factor authentication, use of hardware security modules, and multisignature.

Elements of XZEN Cyber Security



5.5.1 AUTHENTICATION

Fundamentally, authentication protects the assets inside a wallet from unauthorized access in case the wallet is stolen or lost. Authentication is also required to approve all transactions, guarding against deception.

XZEN uses biometric data and/or a passphrase (PIN code) for authentication and access to key functionality.

If you use the XZEN App, you can use multi factor authentication when signing in. In addition, you can also use the following for additional security layers:

- Telegram
- E-mail
- Push notifications
- SMS

In this case, even if your phone is lost and PIN code is compromised, an intruder will not be able to get access to your crypto assets, as there will be additional steps for authentication.

If you use the XZEN App together with the XZEN Wallet, you will get an extra security level. XZEN application (mobile and desktop) pair with the hardware wallet automatically. This is required not just to establish a secure communication path, but also to prevent a possibility of using the hardware wallet with an unauthorized computer. This pairing adds an extra authentication — a user cannot initiate authentication in the hardware wallet without passing the authentication in the application.

In such case, the crypto assets remain 100% secure even without using multi-factor authentication and even in the event a phone or XZEN wallet are lost.



5.5.2 PROVISION OF SOFTWARE STORAGE SECURITY

XZEN DAPP (a mobile application) or a web-version of the wallet help protect private keys for access to crypto assets.

When using the XZEN App without the XZEN Wallet, private keys are generated and stored in the user's mobile device.

We use the following means for protection:

- Special-purpose secure storage areas inside the mobile devices, such as Secure Enclave on iOS and Keystore on Android
- Key encryption using the AES algorithm based on 256-bit keys. The encryption key is generated with the help of PBKDF2. We will offer an opportunity to use Argon2 as the most advanced algorithm

The keys utilize the memory of the mobile device only for a few milliseconds during a transaction after a correct PIN code is entered. To enhance security of private key storage, we recommend using the XZEN wallet.

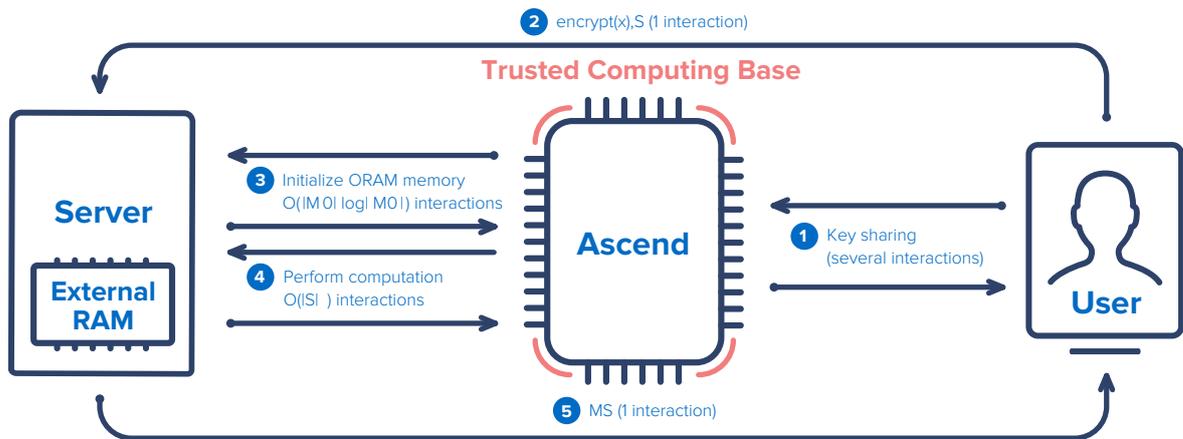
5.5.3 SAFETY OF HARDWARE STORAGE

XZEN hardware wallet generates and stores a user's private keys only inside itself. Moreover, the keys are only stored in an encrypted state thus lowering the risk of breach due to unauthorized access to the system.

Access to all external services and interaction with smart contracts is performed with a digital signature and other similar algorithms with zero knowledge.

A special-purpose i.MX 6SoloLite processing unit inside XZEN hardware devices is responsible for cold storage of the private key. This eliminates the possibility of accessing a user's private key by means of decapsulation of the device. In addition, the processor uses Arm TrustZone technology for more security. This technology splits all applications that are run on the wallet into trusted and untrusted. Only the XZEN application, installed on the wallet, can have access to private keys.

Private keys are stored encrypted. Their decryption is done only when a transaction is performed. After that, they are deleted from the wallet's random-access memory. The keys appear unencrypted in the memory for only a few microseconds, so it is extremely difficult to compromise them. Encryption keys of private keys are calculated based on the confirmation PIN code at the time this code is entered to verify the transaction and are never stored on the device.



IMPORTANT: To ensure maximum security for our clients, XZEN Cyber Security is based on the Zero-Knowledge principle. Neither the creators nor the developers of XZEN have any access to XZEN Cyber Security, and they cannot get access to the clients' wallets nor can they obtain their personal data or private keys.

5.5.4 PROTECTION OF DATA TRANSMISSION CHANNELS

Data transmission protection guards crypto assets against spoofing attacks during transactions. In addition, it enhances protection of funds in case a wallet is stolen or lost.

Although a Bluetooth connection can be encrypted by the phone itself (E22, E21 and E1 algorithms, based on SAFER+ cipher are extensively used), the XZEN system uses extra channel encryption to completely deny interception and/or spoofing of data between a phone and a hardware wallet. Special pairing keys are used as encryption keys. Such pairing keys are created when a hardware wallet pairs with a mobile phone or a computer.

Encryption is performed on the AES algorithm with 256-bit key. Pairing also allows protection from unauthorized attempts to establish a Bluetooth connection with the hardware wallet from a third-party device. Additional pairing keys protect from brute-force attacks (enumeration of the PIN code for pairing with an external device).

Advantages and necessity of extra security lie with the fact that an intruder, who gains physical access to a user's phone and wallet, will not be able to get access to keys, even if a Bluetooth chip is modified. Moreover, the risks of vulnerabilities in Bluetooth chips, installed on popular mobile phones, are removed.

Extra encryption also provides one more level of data protection from interception and modification. Verification of transactions directly during signature provides protection even if an intruder finds a way to interfere with this data transmission.

5.5.5 SECURITY OF GATEWAYS

Since XZEN uses the Graphene blockchain, which is a centralized blockchain, protection of private keys of the gateway becomes one of the major security objections.

To provide maximum security, XZEN plans to use one of the most secured industrial HSM solutions for protection of hot keys at gateways. HSM is a physical computing unit, which allows creating, storing and managing digital keys. This solution will comply with requirements of FIPS 140-2 Level 3 standard³¹. Each HSM module has a FIPS certified deterministic random bit generator (DRBG), the seeds of which are provided by the true random number generator (TRNG), that complies with the requirements of SP800-90B and is located within the HSM hardware module. HSM is equipped with both physical and logical mechanisms for detection of intrusions and response to them. The mechanisms initiate deletion (zeroing) of the hardware device's key. The hardware device is designed with the ability to detect intrusions in case the device's physical protection is violated. HSM is also protected from brute-force attacks. After a fixed number of failed attempts to access the HSM module, using the access data of the responsible Cryptographic Security Officer (CO), HSM will automatically perform zeroing. After a fixed number of attempts to access the HSM module, using access data of the cryptographic security system user (CU), such user will be blocked. Only a responsible Cryptographic Security Officer (CO) can unblock such user.

31. <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/140sp/140sp2850.pdf>

5.5.6 MULTISIGNATURE

We plan to implement support of multisignature in the XZEN wallet. It would be an electronic signature pattern, which requires T keys of the group of N members for its authenticity. It is essentially a variation of a threshold signature, but is implemented not as a single object but as a check of set criteria, which is performed by a basic system of cryptocurrency scripts.

The multisignature principle can be used to increase security of payments with cryptocurrency. The 2-out-of-3 formula creates a corporate address based on signatures of the owner, director and accountant. This pattern is very convenient for companies and can also be used for extra protection of large-scale crypto assets. In such case, it will be required to have access to several XZEN wallets at once to perform a transaction. Use of this pattern together with the XZEN wallet will ensure the highest level of security of crypto assets.

6. COMPARISON WITH COMPETITORS. KEY ADVANTAGES OF XZEN.

6.4 COMPARISON OF THE GENERAL FEATURES

	XZEN	Trezor	Ledger nano	Myether-wallet	Blockchain info	Jaxx	TenX	Crypto-currency exchanges
Cold storage	●	●	●	●				
Multicurrency (more than 3 currencies)	●	●	●			●		●
ERC-20 support	●	●	●	●				
Currency exchange	●				●	●		●
Purchase of crypto-currency with fiat money	●							●
Investments	●							
Lending & credit	●							
Contactless payment	●						●	
Mobile application	●							
Instant free-of-charge payments	●							

The key distinctive feature of XZEN is its combination of a wide range of functionality, typical of full-scale cryptocurrency exchanges, and the security of cold storage. This is a wallet for the mass market — for those, who truly value convenience and functionality, but would not tolerate compromising security as a result.

Looking at incumbent competitors, there are no comparable products on the market that can do everything XZEN is capable of on a single platform. Any single one of the currently available products that resemble and offer features similar to those of XZEN (software wallets of cryptocurrency exchanges and cold storage devices, including Trezor, etc.) can match only some of its functionality, with the most comprehensive competitors coinciding on just 4 out of XZEN's 9 main parameters. All other wallets can offer only 2 or 3 of XZEN's main functions.

6.5 COMPARISON OF XZEN WALLET WITH OTHER HARDWARE WALLETS

Presently there are only a few hardware wallets on the market. The leaders are Trezor and Ledger Nano S. The latter is in the TOP-10 selling items on Amazon³².

The abovementioned products are considerably limited in functionality. Today people are used to obtaining financial services via their smartphones. However, neither Ledger Nano S nor Trezor support interaction with mobile devices (Trezor can be synchronized with Android only, but requires a special cable, which is not supplied with the wallet). If a user wishes to perform a transaction, he must always have a laptop/PC and the connecting cable at hand. One more disadvantage is the lack of a single access point for all of one's portfolio assets as well as the inability to directly exchange cryptocurrencies. This creates challenges for portfolio asset management, and reveals the fact that the existing wallets are more fit for long-term storage and minimal usage. The principle difference of XZEN wallet's philosophy lies with the fact that its purchase must not complicate the interaction with crypto assets but rather simplify it, while making it more secure at the same time.



KeepKey

Price: USD 129



Ledger Nano S

Price: €79.00.

Delivery waiting time — over 2 months.
Amazon's TOP-10 of selling items



Trezor

Price: €89.

Market leader.

Advantages of XZEN vs. the competitors:

- Stylish, contemporary design with premium build quality
- Compatibility with any devices, including smartphones on iOS and Android
- LCD display with high resolution for comfortable usage

32. <https://bitcointalk.org/index.php?topic=2276789.msg23109148>

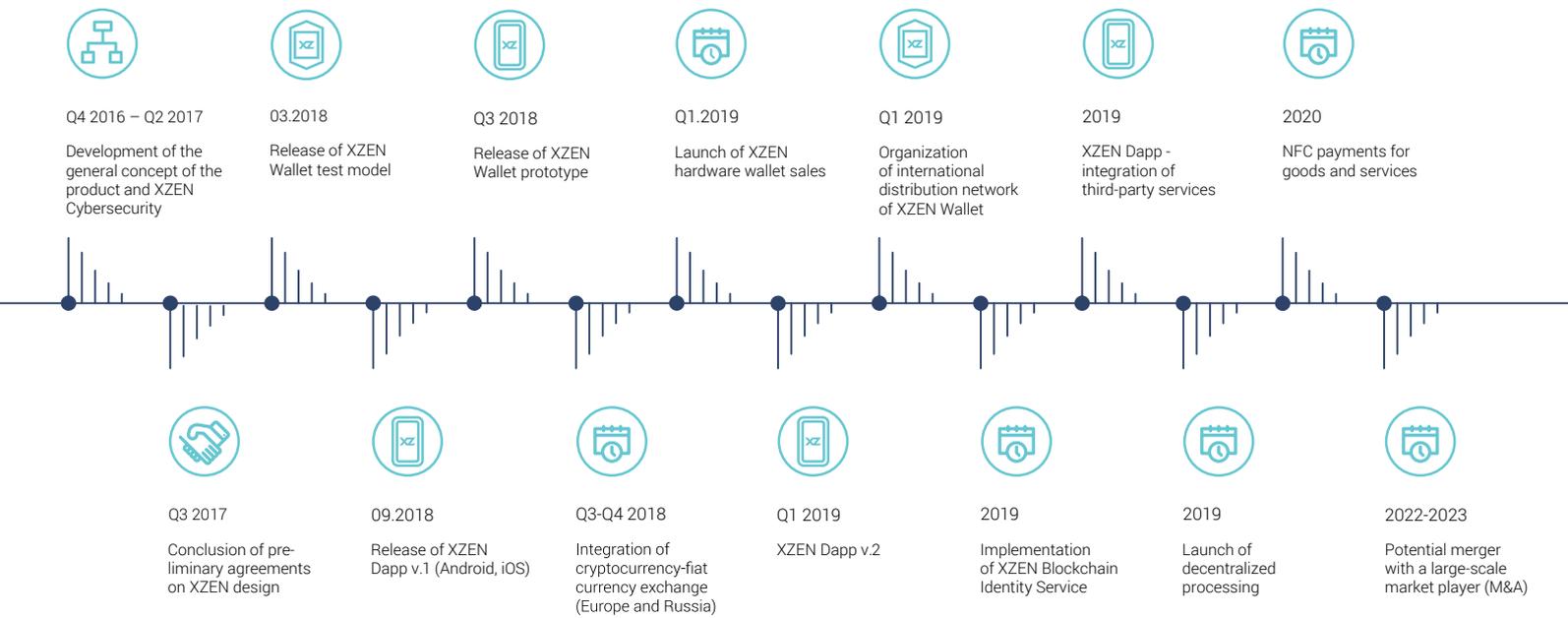
- Convenient and safe identification via fingerprint reader
- Support of wireless connection via Bluetooth 4.2
- NFC chip for contactless payment
- Access to all assets through a single application

The XZEN hardware wallet is the most highly-technological product in its segment. It is equipped with the most up-to-date identification and wireless data transmission technologies. As a result, it is far more convenient in operation and is oriented at the mass market.

7. THE ROAD MAP. PAST, PRESENT AND FUTURE.

We have developed the following Road Map to develop the XZEN Project.

Project key milestones are shown below:



7.4 IMPLEMENTED ACTIVITIES

- Development of the product concept; Completion of market analysis and target audience perception analysis
- Preliminary negotiations with manufacturers and component part suppliers regarding pricelists and production times
- Development of the system and cybersecurity architecture
- Execution of preliminary agreements with partners on integration of various functional services into the product
- Shaping of the team of highly qualified specialists responsible for development of XZEN mobile and hardware wallets
- Release of a cold wallet model (fob)

7.5 PLANNED ACTIVITIES

- **Q3 2018** — execution of the preliminary agreement with manufacturer on production of the first batch of wallets (10,000 pieces)
- **Sep 2018** — Release of XZEN Dapp v1. with support of Bitcoin, Ethereum and ERC-20 tokens
- **Q3 2018** — release of XZEN hardware wallet prototype
- **Q3-Q4 2018** — Integration of crypto-fiat currency exchange
- **Q1 2019** — release of XZEN Dapp v2. Integration of cryptocurrency-to-fiat currency conversion feature (in some countries)
- **Q1 2019** — launch sales of XZEN hardware wallet
- **Q1 2019** — establishment of the global distribution network of XZEN hardware wallet
- **2019** — XZEN Dapp — integration of third-party services
- **2019** — Integration of XZEN Blockchain Identity Service (storage of private data in the blockchain)
- **2019** — Launch of proprietary decentralized processing
- **2020** — Integration of NFC payment for goods and services
- **2022-2023** — Potential merger with a major market player (M&A)

8. TERMS AND DEFINITIONS

Blockchain is a secure database that contains the history of all transactions on the platform by forming a chain of blocks.

Node is a participant of the blockchain system that serves as a repository of information about previous transactions (a chain of blocks), examines the correctness of information about a new transaction and can enter new transactions (add new blocks). All nodes are connected to each other in the same network.

ICO (Initial Coin Offering) is a way of offering to participate in funding campaign/project. There are tokens/coins issued that give the right to receive a share/service/product now or in the future or get a share of the future profit.

Crypto asset is a digital derivative financial instrument, having all the properties of a cryptocurrency. It is issued by a company or a group of individuals to raise funds and grants the owner different rights and privileges. Cryptocurrency is one of the types of crypto assets.

Cryptocurrency is a type of digital currency. Creation of cryptocurrency and control over it are based on cryptographic methods.

Fiat money is the money with the face value declared and guaranteed by the government despite the cost of the material, out of which the money is made or stored at a bank vault. Often it is used as a means of payment, accepted at face value as stipulated by the governmental regulations.

Ethereum is the most popular platform for the release of tokens and smart contracts.

Smart contract is a number of pre-programmed tasks that are automatically executed by the program upon occurrence of some events. Thereafter the program composes a deal. Smart contracts do not require trust between the parties and do not need a mediator they would trust: the contracts have a strict logical structure, so the computer executes them automatically.

Tokens are cryptographic assets issued by means of special-purposed blockchain platforms. The analogue in the real world is a record in a registry. A token has an address and can have a smart contract, which determines its functionality.

Equity tokens are a company's shares.

Utility tokens represent a peculiar value in the business model of an online platform (access to software, payment of commission within the platform, reputation, points for certain activities, in-game currency).

Asset-backed tokens are digital responsibilities for real goods and services (real estate, pieces of art, workhour of a construction worker etc.).

Tokenization is the process of transforming rights into a digital token that is traded on the blockchain with low transaction costs. Tokenization is an analogue of securitization on the blockchain.

KYC (know your customer) is a term of bank and stock exchange regulation for financial institutions and betting offices as well as for any other companies working with the money of individuals. The term means that such companies shall identify and establish the identity of a counterpart before performing a financial operation.

AML (anti-money laundering) is a fight against laundering of money (i.e. is the process of creating the appearance that the money or any other property obtained from criminal activity, originated from a legitimate source and are owned by, used and disposed legally. In other words, transfer of such funds from the shadow economy to the official economy to use the funds publicly).

