



Faireum

A Fair Gambling Blockchain Network for All

WHITE PAPER



Contents

1. Introduction	4
1.1 The Industry	4
1.2 Our Mission	5
2. Structures of Online Gambling.....	5
2.1 Lottery.....	6
2.2 Sports Betting.....	7
2.3 Casino	8
2.4 Digital Games.....	8
2.5 Innovative Blockchain-based Games	9
2.6 Official Games	10
3. Problems with Existing Online Gambling Systems.....	10
4. The Faireum Solution	11
4.1 Key Benefits of Faireum	11
4.2 Roles	12
4.2.1 Users.....	12
4.2.2 Network Supporters	12
4.2.3 Developers	13
4.2.4 Players.....	13
5. Technology.....	13
5.1 Protocol and Platform	13
5.2 Technology Layers.....	15
5.3 Network Contributors and RCM	16
5.4 Cash Management	16
6. Product Architecture.....	17
6.1 Main Components.....	18
6.1.1 Faireum SmartNode.....	18
6.1.2 Side Chain	19
6.1.3 Extended Framework.....	19
7. How it Works	20
7.1 Consensus between the side and main chain.....	21
7.2 Random Number Generator.....	23
7.3 External RNG interface with the capacity of integrating random sources	24
7.4 Blockchain Assets Exchanges	25
8. Business Model	26
8.1 Key Components of the Faireum ecosystem	28
8.2 Value of Faireum Protocol	28
8.3 Faireum Economic Plan	29

9. Market Analysis or Competition	30
9.1 Existing Competitors.....	30
9.2 Comparison with other technologies.....	31
9.2.1 Ethereum	31
9.2.2 Enterprise Operation System (EOS)	31
9.2.3 Online Gambling.....	32
10. Token System.....	32
10.1 Token Distribution	33
11. Roadmap	35

1. Introduction

The Gambling industry is plagued by a host of issues and inefficiencies – the result, a lack of trust between players, developers and services providers due to multiple intermediaries, high fees and unintuitive user experiences. There is an urgent need for an overhaul of the whole online gambling system. A major solution to a fair and modern gambling system is a decentralized gaming platform that leverages the advantages of blockchain technology.

Faireum is a public blockchain with a set of protocols, which focuses on the gambling industry and provides a decentralized, low cost, transparent, and secure betting and gambling experience. Faireum uses its own native currency and smart game contract to guarantee a superb and premium betting experience and services in lotteries, sports betting, casino games and other digital games to users. Faireum releases a smart client based on the set of protocols for the creation of a trustful, borderless, secure, and fast online gambling network that benefits all.

1.1 The Industry

In 2017 the global gambling industry was valued at \$533 billion, with future predictions putting that figure at 1 trillion USD by the year 2021. As the online gambling marketing continues to experience consistent growth, spurred on by the emergence of new technologies and the increased accessibility of the internet, Asia has established itself as the fastest growing iGaming market in the world.

Another decisive growth factor is the adoption of smartphones that provides ease of access to the online and mobile gaming worlds. Other important changes that have taken place in the gambling sector are related to the incumbent regulatory framework that governs it. Regulators are looking for solutions that ensure fair gaming for all, prevent illegal activity and protect consumer rights.

At present, the gambling industry is shrouded by negative perceptions that are exacerbated by high transaction costs, low returns, inefficient cost structures, the involvement of intermediaries in the bookmaking process, lack of security of transactions, transparency and stagnation.

With the popularization of digital privacy laws and the development of technology that continues to improve user experience, we believe that the decentralized gaming market can achieve explosive growth on a global scale.

1.2 Our Mission

Faireum has developed a competitive public blockchain based on the best practices of Bitcoin, Ethereum and Hyperledger. The consensus algorithm adopted from the Byzantine fault tolerance based delegated proof of stake (BFT-DPos) assures the verification of transactions on the Faireum Blockchain as well as its performance.

The protocol we are working on is a set of the standards used for gambling DApp on the Faireum Blockchain. It is also compatible with all of the WASM blockchain contracts written by a high-level programming language and implements Faireum protocols. The first version will be released at the end of 2019. It will keep on evolving together with the Faireum ecology, and will be the key component to bring a next-generation, unbeatable gaming experience to the user.

Our mission is to enable the next generation of many-to-many gambling and betting applications. By building on top of existing blockchains, our applications will be able to be deployed in a peer-to-peer environment, with complete fairness, transparency, and visibility. We believe Faireum is revolutionary and will change everyone's expectations of how fair and fast applications and gaming can be.

2. Structures of Online Gambling

The internet has brought many novel approaches to betting structures, changing the gaming industry. To this day, betting remains one of the most well-known and lucrative internet-based businesses. According to H2 Gambling Capital, global online gaming revenues were worth an estimated \$43 billion in 2017, making up 10% of all global gaming revenues (offline and online combined). By 2022, the global online gaming market will be worth €65 billion. With over 6 million adults gambling or gaming around the world and estimates of greater than 10 million for 2020, the gaming market overall is growing rapidly, with the online

segment of the market expected to accelerate faster than that of traditional casinos.

Mobile play accounted for an estimated 37% of online gaming revenues in 2017, which is over triple the 2010 mobile user base of 11.5%. With mobile use continuing to rise, it is expected to reach 49% by 2022. However, major mobile platforms which dominate the market have heavily restricted "real-money" gaming apps from listing on their app stores or have banned them outright.

There are many types of online gambling. Faireum presents the theory and technology for developers and service providers to develop and deploy them on our main or side chains, and reach a global audience of users in a decentralized environment. Below are some prevalent online gambling games to note, you can also see the benefits Faireum will bring to all types of online gaming.

2.1 Lottery

A lottery is a gambling game where numbers are drawn at random for a prize. While some governments have outlawed lotteries, others have openly embraced them to the extent of organizing national lotteries.

For some lottery players, the experience of buying a ticket and the hope of potentially becoming rich gives them satisfactory levels of return even if they never win the jackpot. When the sum of the individual's entertainment value and the subjective expectation of monetary gain are greater than the psychological expectation of monetary loss, the decision to buying a lottery ticket becomes a very rational one. In short, the acquisition of a losing lottery ticket could actually represent a meaningful gain for some players.

The probability of winning the lottery jackpot differs extensively depending on the lottery design. It is mainly determined by such factors as the count of winning numbers drawn, the count of possible numbers, whether the order of them is significant, whether drawn numbers are removed in subsequent draws and whether bonus balls are also included.

A lottery run on the Faireum platform is exclusively based on a smart contract, which can involve the Oracle service to provide a real random number. Based on different types of lottery games, we can provide users with blockchain lottery games with a maximum RTP of 100%. Faireum's official gaming platform will also launch various types of blockchain lottery games based on Faireum and provide a completely transparent lottery mechanism.

2.2 Sports Betting

A maximum RTP of 100% betting game based on Faireum protocols.

Sports betting involves the activity of predicting the results of a sporting event and placing a wager on its outcome. The most popular sporting events that attract the vast majority of bets include football, basketball, hockey, baseball, boxing, track cycling, American football and mixed martial arts. However, sports betting sometimes extends to non-athletic events, such as political elections, reality shows and non-human contests like greyhound racing, horse racing, as well as the underground dogfighting. Sports betting is mostly done through a bookmaker though some sports bettors still do it by using privately run enterprises commonly called "bookies". The bookmaker's role is to act as a market maker such as a mediator for sports wagers.

Faireum provides a sports betting facility without a bookmaker, which acts more as a betting exchange. Many bettors are unaware of the opportunities of trading with betting exchanges rather than with bookmakers. A betting exchange, apart from offering more opportunity for a bettor to trade their position, provides more value and more flexibility by allowing bettors to set their own RTP. The resulting impact of the emergence of betting exchanges was the disruptive nature that they brought to the betting industry, as more and more bettors realize their value as compared to traditional bookmakers.

Betting exchanges provide a platform for bettors to trade the results of specific events, whether these are current affairs, politics or sports-related. The main difference between the traditional bookmaker and a betting exchange is that a betting exchange allows bettors to bet against each other and not against a bookmaker. Betting exchanges have since allowed users to place bets on each other or set their own RTP, replacing a model made up entirely of gaming options and RTP restrictions offered by gaming companies. However, compared to traditional bookmakers, betting exchanges in operation are few, therefore limiting the choices available to bettors.

Faireum provides such betting exchange contract both from protocol level and from FSN (Faireum Smart Node) level. By connecting to the Oracle service center, the sports result will automatically get synchronized with the trusted third party, the betting result will be revealed automatically, and the payment will be made instantly. The DApp in Faireum will be more open and easy to develop based on Faireum betting/charge protocols, and multi-types of

betting and charge models will be supported by Faireum network. Meanwhile, C2C (Consumer to consumer, betting between friends), B2C (Business to consumer, gambling platform), and B2B (Business to business, capital hedging) will be perfectly supported through the standardized Faireum protocol.

What's more, by supporting the interface for insurance services and 3rd party services, Faireum can also provide service of guarantee betting and insuring for the digital assets of inner service providers and developers, resulting for a more powerful trust of decentralization and payout business model.

2.3 Casino

A casino accommodates a variety of gambling activities. They are mostly built near or are part of restaurants, hotels, retail shopping, tourist's attractions or cruise ships. Thompson (2015) explains that casinos originated in Italy and originally meant a small country villa, social club or a summerhouse. The term casino was later to be expounded to incorporate other public buildings where pleasurable activities were undertaken.

Casino customers gamble by playing games of chance, such as baccarat, craps, roulette, poker, and blackjack. Even if the house enjoys an advantage over players in the casino games, there is always the chance of huge wins for players.

Big offline casinos usually have a full industry promise and lots of business licenses to keep their trust degree since players play casino games only if they trust the security and transparency of an offline casino. But there are many problems on transparency and payment in online/offline casinos that prevent players from going deep into the business logic and payout methods.

The Faireum Blockchain provides a B2B solution for all online/offline Casinos with chips and cash management. Together with Faireum token, FairCash and all coin-related protocols, the Faireum Blockchain provides a very flexible way to manage credit, score and coins. All of the business processes and related data will be recorded onto the ledger of blockchain where it will provide full transparency for the core business logic of casino.

2.4 Digital Games

Although digital gaming has long been a popular pastime worldwide, the development of digital gaming as a competitive e-sport is a relatively recent trend.

This is in part, the result of lowering the entry threshold of digital games year-by-year and more and more players being attracted to gaming thanks to the huge promotion of the Freemium model.

Freemium is a business model where the majority of users are provided the basic services for free, while a small portion of users consume advanced (premium) services for a fee. The Freemium model helps the rapid expansion of the user base of services and assists in attracting large numbers of premium customers. Paymium is another business model where the majority of users pay a fixed amount for the basic services and are charged additional fees for advanced (premium) services.

Market Research Engine (MRE) (2018) predicts that the industry will experience a CAGR of 20% in the period from 2015-2020. The integration of virtual technologies into digital games is an emerging trend driving up demand. Moreover, the Freemium model leads the mobile and social gaming platforms, whereas for PC and console gaming devices the Paymium model continues to be popular.

Faireum provides a final protocol for quick implementation of digital games, and a set of basic APIs of the application layer. Both the integration of the Freemium/Paymium model, and the digital asset model, the base user model, and the paid/subscribed interface for different models will follow the standard protocols in Faireum. Third-party developers and users can use and choose the best combination of functions flexibly and will be supported by Faireum's full ecological resources.

2.5 Innovative Blockchain-based Games

Advanced DApp-based games like Fomo3D and Ether Cat have become more popular recently. More of the similar games are expected to appear in the future due to high demand. In the Faireum Blockchain, these kinds of games will be defined as innovative blockchain-based games. We provide the infrastructure support, such as code auditing, name service registration and listing in FSN to avoid possible hacking attacks or fraudulent activities as well as to ensure the quality of the code.

With the decentralization of Faireum game access standard protocol and application layer API, more innovation games will be released in the Faireum ecosystem. Meanwhile, with the increasing business services such as fund trusteeship service, insurance service, and security audit service, KYC service will make the gambling games on Faireum blockchain more trustworthy and the assets on Faireum blockchain safer.

2.6 Official Games

Faireum blockchain network also offers officially produced gambling games, with all subscribers receiving up to 100% RTP. This allows us to break the traditional business model of the industry and creates a new service-based model. A higher percent of RTP together with the Freemium games will increase the popularity and retention of online games and provide the best protocol rule for Faireum protocols. Paid subscribing users have access to more information such as metric analysis, support, premium game access and financial services.

3. Problems with Existing Online Gambling Systems

Despite the significant growth of the online gambling industry, several on-going issues have made some countries reluctant to legalize online gambling. Additionally, a large number of people are deterred from trying out gambling due to problems with trust, security and unreliability.

At present, all aspects of gaming from RNGs, user account management to market access rules for developers can be attributed to its centralized model and lack of trust.

Problems for Players:

- Withheld bonuses
- Account restrictions due to location
- Hidden fees: casinos charge a fee for withdrawal
- Withdrawal restrictions
- Limits and slow processing speed of payouts
- Risk of fraud

Problems for Service Providers:

- High entry fees for the game developers
- High costs of running an online casino
- Operations overheads such as integrating payment systems and user account balance management
- Slow server running speed and frequent downtime events
- Lack of transparency and credibility
- Lack of support for blockchain services/protocols

There are many other problems with traditional and online gaming systems. For example, starting from game selection, the transparency of random number generation and payment process will greatly affect the player's gaming experience. Without blockchain-based intervention, there can be no sustainable model for online gaming.

4. The Faireum Solution

The Faireum team is currently developing a platform that will create a paradigm shift in the online gambling industry and solve all aforementioned issues. After the ICO, Faireum will fully implement and run a blockchain-based ecosystem with its own set of protocols, where developers can publish their own Dapps with custom features to meet Online Gambling requirements. The ultimate goal of Faireum is to remove the risk inherent in the current system by making it decentralized, transparent and trustful.

4.1 Key Benefits of Faireum

By creating a new blockchain and a set of protocols with custom features to meet Online Gambling requirements, Faireum will introduce a platform that is trustful, borderless, secure, and fast for blockchain-powered online gambling, therefore:

- Reducing operational costs of online gambling, therefore, providing higher payouts.
- Reducing the risk of fraud.
- Reducing the cost of user accounts and money management for online casino operators
- Enabling game developers to monetize their work.

- Enabling game developers to generate revenue without having to operate after the game is released.
- Creating an open ecosystem of provably fair interoperable online casinos.
- Integrating a system of replicable templates and incentivized sharing to allow game developers to benefit from a new value transfer rule that Faireum offers.
- Providing the third parties with trustful and transparent service to fit development under Faireum protocols.
- Providing an official gambling platform that is based on the Faireum network for fully transparent betting and charging.

4.2 Roles

We have identified several types of System Participants in the Faireum ecosystem. Each will fulfill a different role as needed for the system to develop and to function.

4.2.1 Users

Users, including business entities (such as online game company or casinos) need to pay a network fee to the nodes to use any service on the Faireum platform. They can either acquire Faireum token from other token holders or they can run a node themselves to start acquiring tokens by contributing to the network. In addition, they may also pay in Faireum token to access the games/Dapps sold in the marketplace by the developers.

4.2.2 Network Supporters

Network supporters (nodes, FSN) will receive Faireum Tokens as a reward for the contribution to the network. There are four kinds of network supporters:

- Block Producers (SuperNode): by staking a certain amount of tokens, one node can be the block producer contributing to the validation and creation of a new block. They get block rewarded, transfer fees or developer's profit whenever a new block is created and confirmed by the network. In the early stage after Faireum network launch, there will be 15 ~ 27 nodes of Block Producers which were voted by Faireum community.
- Block Partners: using the current inventory as a community vote to support the voting of the block producers and share the final income through the contribution income generated by the corresponding block producers.
- Distributors: by running Faireum Node, the distributor can act as a proxy to distribute the

service and the games to more users. They get rewarded when users play the game through their proxy service. They can also get extra rewards by providing more service or support to the users.

- **Block Licensor:** different countries and regions have different requirements for the legalization of gambling, block licensors will provide a local license for blockchain gambling operating. As the main authorizer of the legalized operation of gambling, block licensors provide legalized authorization or gaming licenses through the agency mode and generate revenue through profit generated by distributors and developers.

4.2.3 Developers

Developers will range from individual contributors to big gaming companies. Developers need Faireum token to deploy their applications on the Faireum Network. They can charge users a fixed amount of Faireum Tokens to provide games or applications. High quality developers and quality projects are also recognized as contributors by the Faireum network and receive additional rewards.

4.2.4 Players

Players can play all the games on any platform based on Faireum network, or they can also play fully-transparent blockchain games on the Faireum official gambling platform. Faireum tokens will be charged according to the games, with each game tag having a clear RTP which can be validated on blockchain before play. A transfer fee will be charged for player betting and there will be some charges if developers make profits in the games.

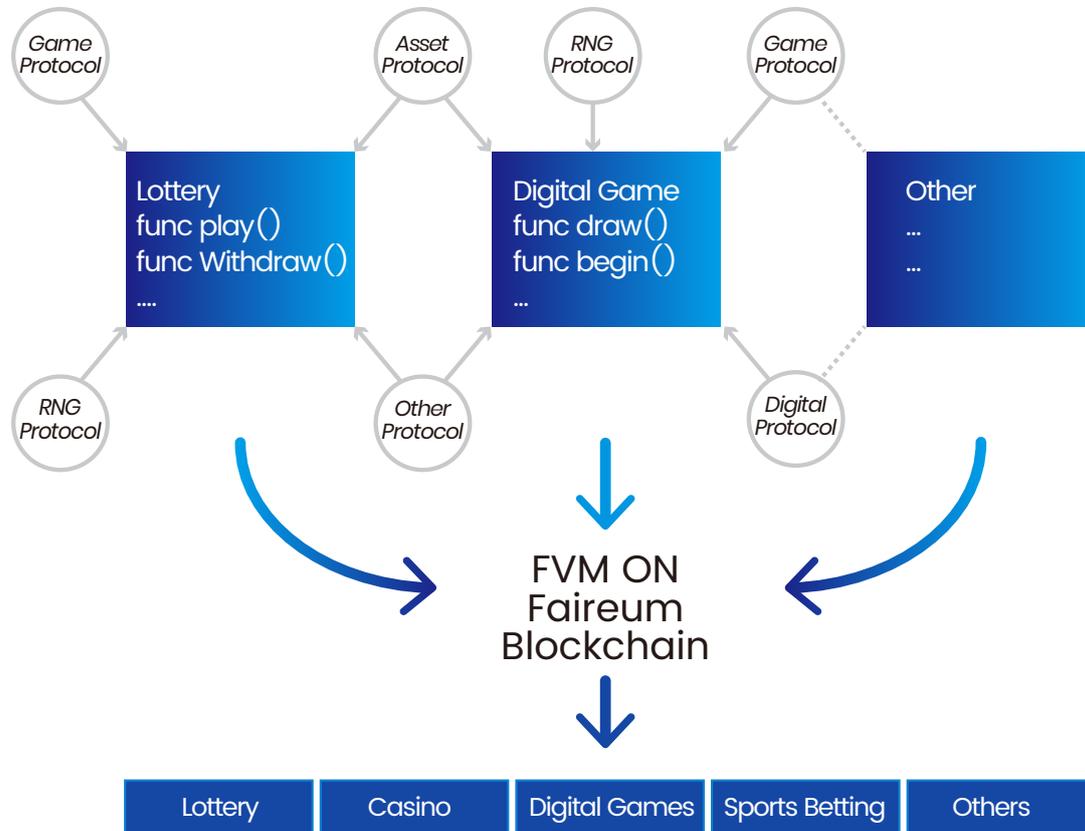
5. Technology

5.1 Protocol and Platform

Faireum's online gambling technology protocol leverages the transparency, security, and efficiency of the blockchain to power a unique ecosystem which connects casinos, players and developers in real time. The protocol has been built to effortlessly support a near-limitless number of trustful, transparent, server-free, decentralized betting and gambling DApp.

The Faireum gambling platform runs on top of Faireum blockchain and its protocols, to

support a new generation of gambling DApp compatible with all of the WASM blockchain contracts written by high-level programming languages to deliver a wide range of fair game content from an open developer marketplace.



For network supporters and users, Faireum is not just a next-generation gambling system but a complete enterprise solution with payments, security, and databases all administered on the blockchain.

Faireum is an independently implemented blockchain, which uses WASM virtual machine to run a smart contract. This makes it compatible with the majority of existing online and offline clients and development tools. At the same time, we provide our unique features optimized for the gambling industry.

Faireum features:

- Random BFT-DPos (Delegated Proof-of-Stake) used as the algorithm to run validation and consensus
- Faireum token can be used to play games, pay for services or reward contributors

- Support to play with cryptocurrency backed by fiat, where users can bet or play the game with “real” money
- Embedded name service: the wallet address, the game or the organization can be specified and verified to avoid fraud or money laundering
- Special wallet encryption support for cash management
- Multi-signature function support for chips or assets exchange
- High-level random number generator functions support
- Reward mechanism for game proxying support
- Subscription model: permitting users to authorize the blockchain to charge by the day, month or year, etc.
- Trustful blockchain APIs for gambling
- The transparency and reward service of the blockchain, a healthy and strong gambling ecosystem
- The first to apply RTP of up to 100% on the gaming platform in the blockchain

5.2 Technology Layers

The Faireum protocol employs a combination of smart contracts based on WASM, a standard cryptocurrency protocol and state of the channels to deliver real-time, decentralized casino gaming.

The Faireum blockchain encompasses the ledger nodes, P2P networking, a virtual machine for Smart Contract and a set of rules for the token distribution, which includes the token reward, payment gateway, digital asset exchange, and cross chain atomic swap.

One of the innovations of Faireum is its double-layer structure. Through the consensus mechanism and FVM in the main blockchain, one systematic “business chain” has been defined for the service of gambling. It is specialized in high TPS and low handling fees and provides several general RNG and a set of contracts of gambling for our players.

In other words, Faireum is a kind of blockchain platform with API. Faireum’s main blockchain will use the WASM virtual machine as the default runtime for the smart contract.

Faireum will also define the “trust protocol” for the side chain consensus by public key protocol and the ID protocol of the user account. This protocol will allow other parallel chains to access the Faireum main blockchain or its side chains to participate in the consensus. Therefore, we can exchange bitcoin, ether, Faireum Tokens and other digital assets through

this cross-chain protocol. Any of the decentralized networks that support the payment route and HTLC (Hash Time Lock) will be able to implement the atomic swap with Faireum and fulfil the regulatory requirements. In addition, through the "trust protocol", the games which cost huge resources and performance can be published on the side chain layer by developers, shared and synchronized between main/side chains.

Faireum also implements some advanced storage service. All stored data will be encrypted and the storage service provider will be treated as a network contributor and rewarded through RCM (Rewarding by Contributing Model).

5.3 Network Contributors and RCM

The Faireum concept is one-of-a-kind in that it features a unique technology, called RCM (Rewarding by Contributing Model), which will reward contributors through a token reward mechanism. The contributors include:

- Block producers, who run the full node and are assigned the task to do the validation for the new block, pre-committing and committing.
- Block partners can use the current inventory as a community vote to support the voting of the block producers, and share the final income through the contribution income generated by the corresponding block producers.
- Block Licensors, who provide legalized authorization or gaming licenses through proxy mode and generate revenue through profit generated by distributors and developers.
- Block Distributors, who run the Faireum Smart Node as a proxy host and distribute the games to reach more users.
- Developers, who publish games or Dapps used by users on the platform.

- Third-party blockchain service providers, who provide commercial level blockchain services such as security audit and insurance services for Faireum's gaming games on the blockchain network.
- Other contributors who are helping the Faireum community.
- Faireum ecology-based leasing or other services.

5.4 Cash Management

Faireum solves the two biggest issues in the online gambling industry related to money laundering and tax avoidance. The Faireum blockchain-based gaming network proposes a fair and transparent ecosystem, but also a legal environment that can be regulated. To achieve this, the platform will be fitted with several cash management components, such as:

- Faireum will support the anchoring of FairCash of legal currency after the main network is launched, and the margin source of stable currency is the reserved fund pool balance and the income generated by corresponding businesses.
- FairCash will be anchored one-to-one against the dollar by an actual margin. Players require KYC to avoid money laundering when injecting funds.
- Transfer of FairCash between different wallets, but it can only be cashed into a special wallet address, which is encrypted in a different way and used for cash management purposes only.
- FairCash can only be cashed out from the cash management wallet address after a KYC process as well for regulation and tax collection purposes if there are any.

These mechanisms will allow Faireum to correct current issues in the online gambling sector with the introduction of our peer-to-peer system, eliminating unfairness and a questionable trust system.

Faireum will define a standard fiat currency protocol for FairCash that is separated from the instant, encrypted payment channels that Banks provide. FairCash in Faireum will not be issued out of thin air, and all FairCash in Faireum ecology will be supported by the capital pool of Faireum token reserved by Faireum and the income generated in Faireum blockchain network operation. Finally, some equivalent U.S dollar funds will be converted into equivalent FairCash as the deposit issued by FairCash.

FairCash plays a crucial role in maintaining user identity and the constancy of chip value throughout the game.

6. Product Architecture

Faireum is a programmable blockchain that allows for a smart contract to be written on it and is easy to integrate with other systems by using API and SDK.

- Faireum supports WASM virtual machine and almost all the existing gambling game

contracts written for Ethereum or EOS can be migrated to Faireum quickly through a protocol conversion tool.

- Faireum also supports a smart contract in a high-level programming language such as Java, Python, Javascript, etc. This opens it to an even larger developer community that can support more and more games and applications.
- Oracle Centre - It is the service running on a bunch of trustful nodes to provide the oracle service (external service and data) to the Blockchain. Such as random number, sports game result, and timestamp etc. It is also running on another layer of Blockchain and running as a cluster to ensure the security and consistency of the service.
- Faireum supports the concept of Blockchain as a service. By providing the RPC and restful service, it is easy to create a new wallet or to integrate Faireum with existing gaming systems. For example, if one gambling system only wants to use the FairCash as its payment method, it is easy to integrate it as a regular clouding service by using the API.
- Faireum provides the programming language integration. In the later release, we will provide the SDK in JavaScript, Python, and Java.

Faireum will create a blockchain environment tailored to the online gaming industry based on P2P smart contracts that will serve both third-party online gaming developers and end users.

6.1 Main Components

6.1.1 Faireum SmartNode

The Faireum Smart Node (FSN) is a blockchain node running on the user's computer or phone, which can provide both wallet function as a client and proxy function as a server. The Faireum Smart Node (FSN) is a blockchain node running on the user's computer or phone, which can provide both wallet function as a client and proxy function as a server.

- Working as a Node Service: the FSN has two working modes: full mode and light mode, which can be selected depending on user requirements.
- Working as a Client Service integration: the FSN can also run in online mode, just to connect to the service of Faireum's blockchain.
- Working as a wallet: the FSN can fulfill the function of the wallet for the user Faireum account. You can use the FSN to manage your portfolio, cash and digital assets.
- Working as a game center: the FSN can work as a game center for players and developers. Developers can host games through their own outside-chain service or in-

chain contracts. Players, on the other hand, can browse the list of games from the FSN and then launch and play the games of their choice. We have introduced a reward function, called rewarding by sharing, for games in the Faireum blockchain. Once a game has been played and shared, both the developer and player will get rewarded by the Faireum blockchain.

- **Smart Node Partners:** Smart Node Partners is a set of rules for third-party service suppliers, it can be used by some gambling service providers for third-party services such as insurance, financial futures or mortgage provision. The service provider follows the protocol of the Smart Node Partner and developers/players can choose one of the services at the game stage.
- **Smart Exchange:** A Smart exchange will be published in future, It will provide a decentralized exchange for users of FSN. Users can exchange their assets with other users' assets on the Smart Exchange.

6.1.2 Side Chain

A side chain can be produced to support increased capacity and improvement of performance. The side chain can communicate with the main chain and extend the functionality of the main chain.

Faireum supports an autonomous update function to allow more and more extensions from different partners to be implemented. including improving the capability and performance (TPS) of the main chain and enhancing the communication between the different blockchains.

6.1.3 Extended Framework

As the best blockchain for the gambling industry, Faireum goes further than introducing freedom and flexibility through the use of a decentralized system in the online gambling sector. With the addition of expanded functionality, implementing an exchange for the assets from different blockchains under the cross-chain consensus, and protocols of games, third-party developers can deploy many applications on the main chain or sidechain of Faireum. These can extend the games pool of Faireum and result in improved and more immersive player experience.

To maximize the service utility for the gambling industry, Faireum will extend assets and game protocols to the cross-chain.

Faireum has defined many layers of protocols for remote communications, and also

provides cross-chain asset exchange protocol and business interaction protocol based on Faireum communication protocol for third-party extensions, nodes, and developers, which enables Faireum to adapt to the diversification of chips and the globalization of assets and accept more excellent developers and blockchain gambling games.

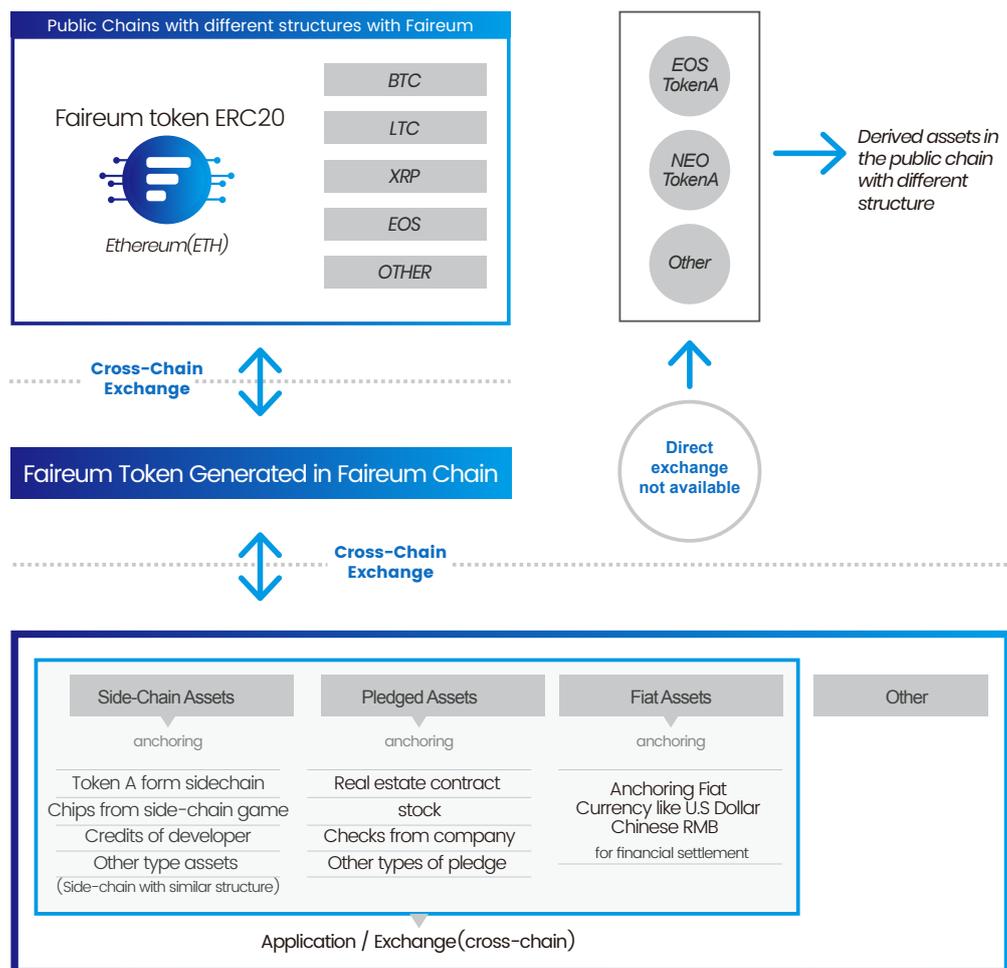
7. How it Works

In the traditional and online gambling industry, different kinds of information like the consumption of users, related VIP level, quantity of the win or the professional estimation of capability, are collected and stored in different centralized systems. Data exchange is connected with great difficulty, which leads to problems with the evaluation of virtual assets like ranking, performance, credit, etc.

The Faireum Chain will abstract the protocol for the virtual assets, which will ensure the data structure of the storage and transfer. Virtual assets either from Faireum or from third parties will be stored permanently on the Faireum blockchain.

Additionally, the Faireum blockchain will enable other requirements from the owner of the virtual assets through smart contracts. Through the protocol of virtual assets in Faireum, virtual assets could be transferred or stored easily. Moreover, the game developers and third-party service providers could also design their own module of the virtual assets based on this protocol.

Basic Module of Assets in Faireum



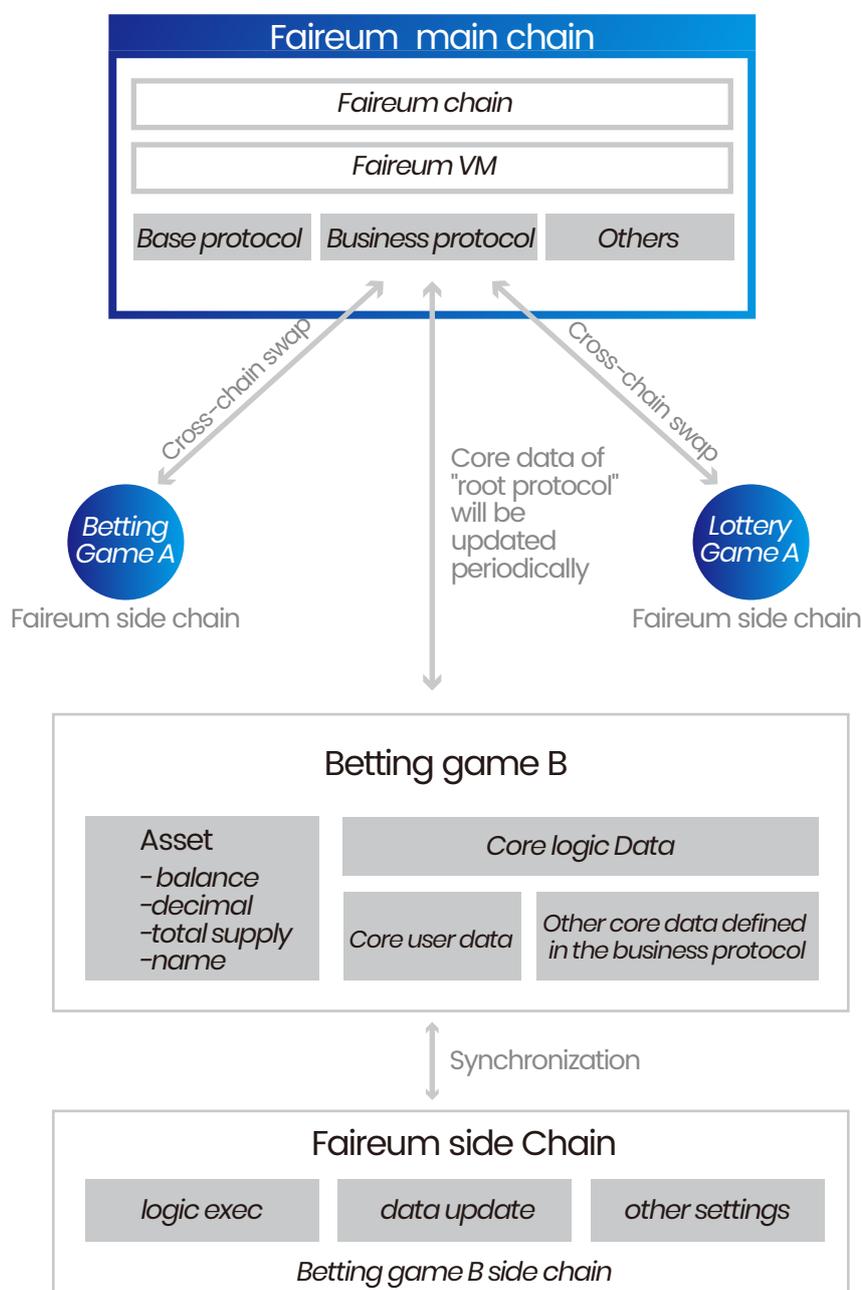
7.1 Consensus between the side and main chain

When a third-party would like to publish an innovative and large-calculations gambling game, but the resources in the main chain are not available for the game, the side chain would be a good choice for designing, developing and publishing this game:

- The asset design of the Faireum ecosystem supports the permanent asset protocol and a variety of different types of assets that are cross-chain portable.
- If a third party wants to use the side chain for game design, it needs to create the 'main chain root protocol' of its side chain game on the main chain. The protocol will include side-chain block/trade header data, the game's core state and user data, as well as one complete set of principal side chain asset swap rules (proportion, discount, activity, etc.).
- Select the appropriate template to create the side-chain game and business. At present,

the side chain will adopt the basic PoA (proof of authority), BFT, etc. to achieve the consensus and record the status of the business data.

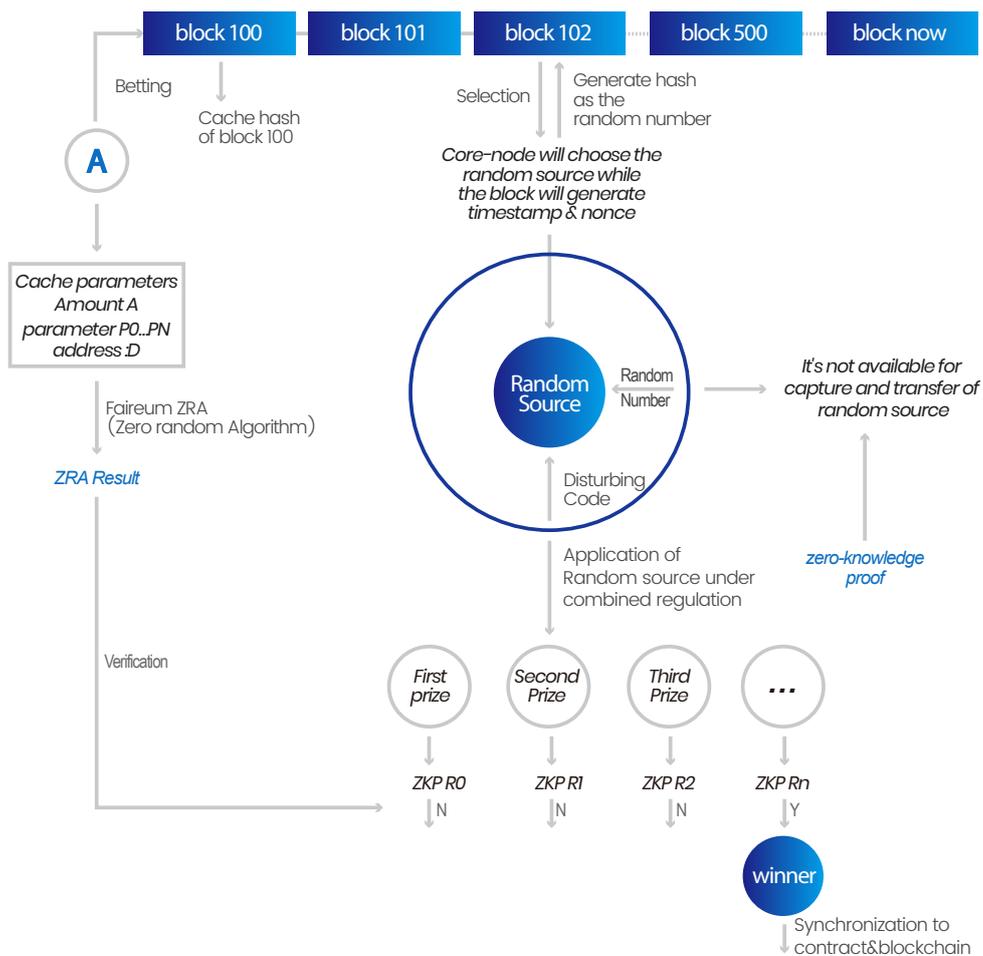
- The side chain will synchronize data with the main chain periodically to accomplish the cross-chain consensus. Generally, the business logic unrelated to capital needs to be completed only in the side chain, and the update of assets needs to be synchronized with the main chain.
- Once the cross-chain consensus is achieved, the data of the side-chain business and the asset settlement of the main chain will be updated to the latest state, completing the synchronization of cross-chain coordination. This process in Faireum usually completes the update of side chain gaming asset data on Faireum main chain.



7.2 Random Number Generator

Starting from game selection, the random number generation and the payout system, the industry involves a rigorous process which affects the player the most. Other blockchain platforms do not support a Random Number Generator, but the Faireum blockchain uses the totally fair and transparent RNG service. In order to let the users know the fairness of the game, the design of our FVM combines multi-factor random number generation algorithm, which is different from the traditional pseudo-random number or Hash + timestamp variant random number. The Faireum blockchain combines the generation of the random number with its block structure/consensus mode and will reserve the corresponding data field in the block to generate the random number.

Internal RNG combined with Zero-knowledge proof



7.3 External RNG interface with the capacity of integrating random sources

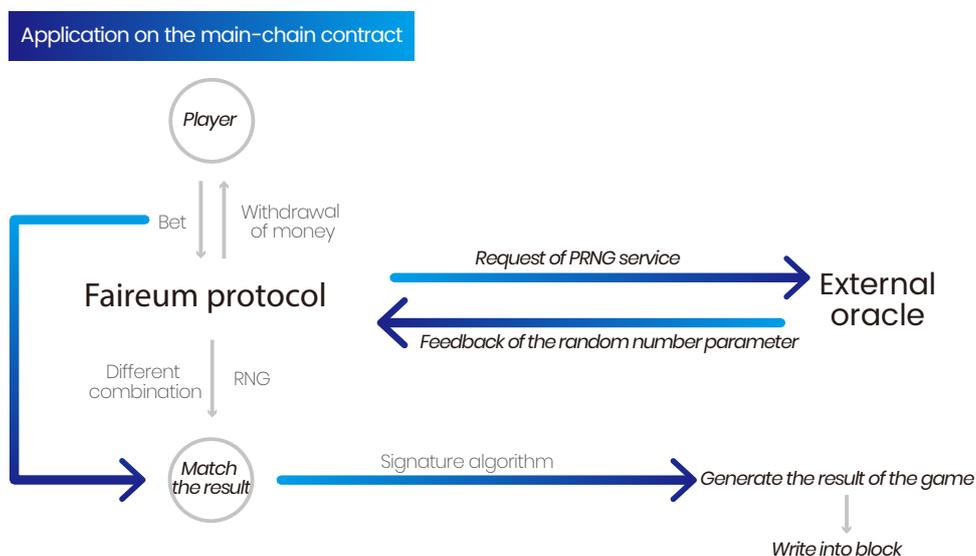
Besides the internal RNG, Faireum blockchain supports random numbers generated by external trust sources or other side chain focusing on the data output and can be perfectly compatible with the existing contract system of FVM.

The function is like the Oracle Service on the Ethereum network. Based on the Faireum RNG protocol template, the external trusted data source can serve as a data provider to provide external API services of the RNG to Dapps in the Faireum blockchain. As a trusted data provider, the rewards of the platform or the corresponding service fees can be obtained through calls of application.

The reason why Faireum reserves the external trusted source for RNG is to provide other feasible solutions for those who are not willing to apply the Faireum built-in RNG, which is built on the concept of the decentralization.

This also proves Faireum's ability to scale horizontally. When the user makes a bet, the smart contract will invoke the out-of-blockchain service through the event channel, and the external service will provide the external random data to the smart contract, and the result will be generated and recorded on the Faireum blockchain. This externally generated result will directly affect the final game results.

Example of the external random number application



7.4 Blockchain Assets Exchanges

There are many different assets on outside blockchains such as BTC, ETH, LTC, EOS, etc. Each asset may be published on its own blockchain and exchanged on exchanges or wallets, but assets are usually disconnected between different chains.

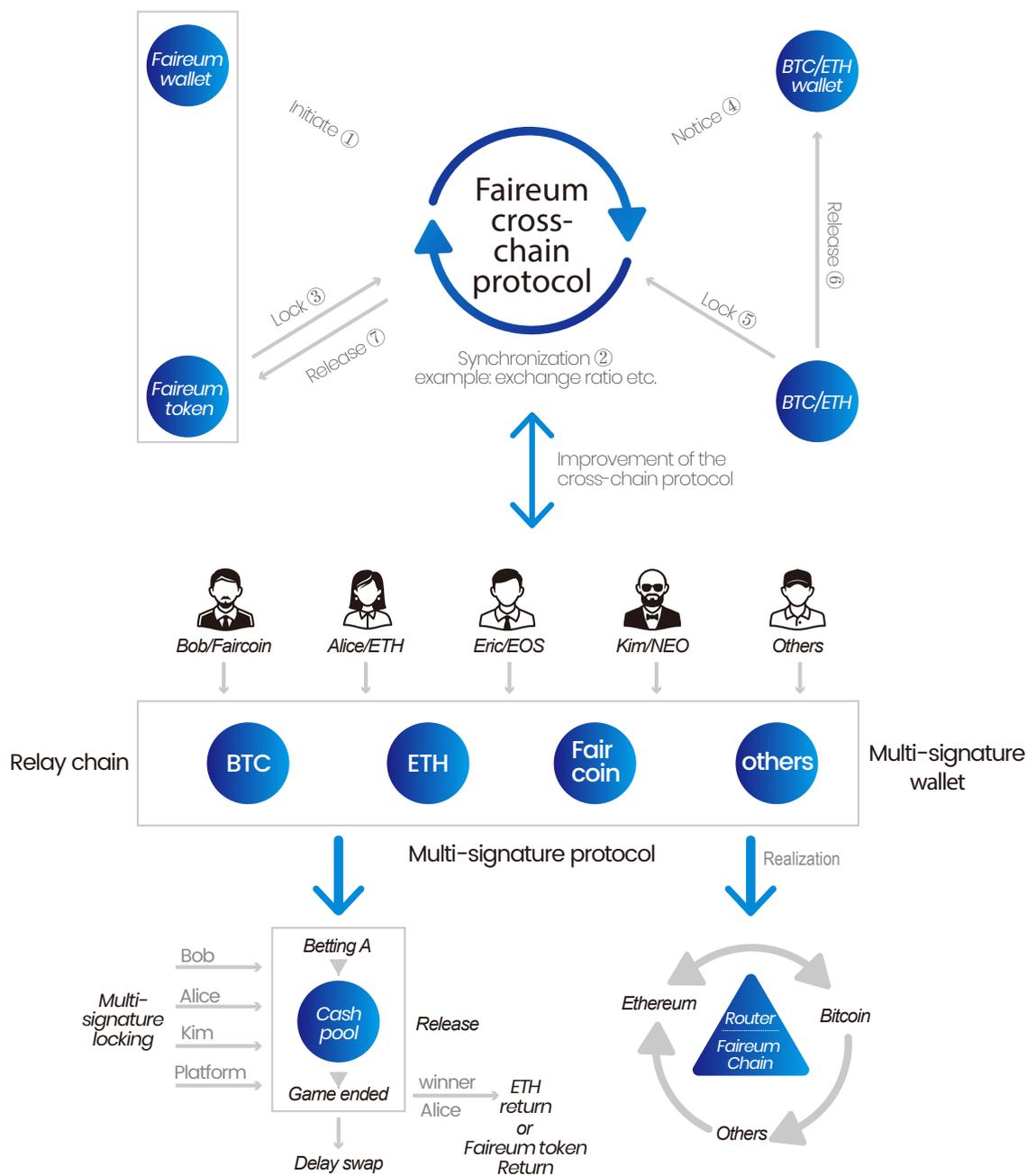
In the Faireum blockchain, different assets will be interconnected with each other, and they can be exchanged at any place and any time through Faireum's cross-chain protocols and smart contracts. Faireum defines a basic protocol for outside blockchain assets and creates a cross-chain assets exchange concept.

The integration of Notary schemes, side chains/relay chains, hash time locking, and features of an atomic swap are several of the innovations of the cross-chain function in Faireum and could achieve the following targets:

- Convenient transfer of digital assets: inside or outside of Faireum, all the assets can be identified by the Faireum Blockchain, and transfer is fast and transparent.
- Cross-chain Communication: at present, cross-chain communication is generally completed through the communication interaction between smart contracts on different chains. The contract interaction between any two chains should be connected. Faireum inter-chain protocol defines and implements the specification of inter-chain communication, making cross-chain communication on any chain possible.
- Atomic Swap: the data from different chains should be in the same status, or the transaction successful in one chain will fail in another chain. The hemostasis lock in the protocol level and the rollback mechanism of FVM ensure the ACID (atomicity, consistency, isolation, durability) for the cross-chain function
- Traceback of assets: to fulfill the requirement of cross-chain assets swap, the assets from different chains need to be locked simultaneously. Before the accomplishing of the assets swap, the owner is allowed to dispose and trace back his assets under the punishment mechanism for fraud and dishonesty. The security of the cross-chain assets disposal is guaranteed by the administrative module designed especially for the information lifecycle management for Faireum.

How is the function of cross-chain assets swap

The nature of a cross-chain



8. Business Model

Faireum is the next generation ecosystem. Faireum provides third-party developers with a

completely trusted and decentralized blockchain gaming operation mode and improves users' gaming experience with this mode. By building on top of existing frameworks of the blockchain assets protocols, our applications will be able to be deployed in a peer-to-peer environment, with complete fairness, transparency and visibility. We believe Faireum is revolutionary and will change everyone's expectations of how fair and fast applications and gaming can be.

Currently, the majority of traditional gambling service providers are actively creating and innovating around the web to provide gambling and betting solutions. However, the centralization, slowness, and low efficiency of online gaming due to centralized protocols require special attention. If the industry is to achieve the unprecedented prosperity expected in 2021, it must adapt to Internet 3.0. In other words, the adoption of the blockchain protocol is a must in this industry.

Faireum is currently developing a platform to create a new model for online gaming to complement the existing system. After the ICO, Faireum will fully implement and run an online betting platform supported by Faireum blockchain framework. It will focus on users, players and developers and service providers, and Faireum net-based protocols and incentives to provide a more perfect and healthy gaming ecosystem.

This system can provide a P2P marketplace for game developers and support a large number of independent front-end platforms where players can discover and play gambling and betting games. We will be providing the platform on a smart contract with other third-party developers to leverage on with the end goal being the creation of a global, decentralized system, where any barrier and central authority is eliminated, and where players would enjoy a fast, fair and secure online gambling experience.

With the act of creating a new blockchain based on the Faireum protocol and custom features to meet Online Gambling requirements, Faireum will remove the risk inherent in the current system by making it decentralized, transparent and trustless.

Both the Faireum blockchain network and the Faireum blockchain gambling platform which are based on the Faireum blockchain will be launched for all users. The Faireum blockchain framework will provide blockchain services and drive a set of protocols for all participants in the Faireum blockchain network. The Faireum gambling platform based on the Faireum blockchain network will publish many kinds of blockchain gambling games for all game providers and players.

8.1 Key Components of the Faireum ecosystem

Transparency: everything is transparent from deposits to game results. Faireum achieves this by recording everything on an immutable ledger that is visible to every person.

Trust: because everything is written in Smart Contracts, users are not playing games at the mercy of the service provider, game developers, payment processors or platform owners.

Secure: within the Faireum ecosystem, users are totally responsible for their security by owning the private key to their wallets. They can be stored on their local computer or on a cloud-based server that is under their control. Then they need to deploy this private key or upload their wallet from a local computer to initiating a game.

Experience: for all the roles of game providers, developers, proxy nodes and players, Faireum provides a basic blockchain framework and standard protocols group for quick development and easy steps on blockchain gambling.

Reward: a set of perfect reward mechanism is one of the main reasons to support the continuous development of a gambling platform. Such a reward mechanism based on blockchain must form a larger scale of user communication in the early stage, and at the same time, it can continuously recycle and stimulate the ecosystem on the basis of having a certain number of users. Faireum is a perfect design for the reward balance of gambling participants.

8.2 Value of Faireum Protocol

Faireum is not just bringing freedom and flexibility through the use of decentralized systems in online gaming to create the best gaming industry chain. With the addition of expanded functionality, implementing an exchange for the assets from different blockchains under the cross-chain consensus, and protocols of games, third-party developers can deploy many applications on the main or side chains of Faireum. These can extend the games pool of Faireum and result in an improved and more immersive player experience.

Faireum's aim is to create a sustainable model that benefits all parties involved in the online gaming business process. (Faireum generates more revenue for developers than the previous model; it is cheaper for gaming operators to offer better services to their players.

Players can get a wide variety of more transparent and safe games from indie game developers.

Faireum protocols still require a fee system, but the distribution of fees is a hardcoded reward system for all the participants described further. There are no hidden fees.

8.3 Faireum Economic Plan

The main revenue stream of Faireum will come from developers' commission-based revenue. The business model will focus on attracting users via marketing activities, empowering users and creating a global community of players who want to participate in the network.

Faireum will operate a platform with a high margin of profit from developers and other parties in the ecosystem through the provision of several plans:

- Developer plan. Developers can write the games and Dapps with Solidity or other programming languages and are not limited to publishing smart contracts to the Faireum Blockchain network. Faireum will charge a transaction fee for publishing a smart contract and charge a listing fee for listing the game on the FSN. For games or Dapps that reach a certain number of users, Faireum will return the transaction fee and listing fee as a reward and will further reward from the community reserve pool if the game is popular enough.
- 100% RTP and subscription plan. Faireum supports a special charge subscription mode, which can be authorized or revoked by the user at any time. Based on the subscription model, developers have a chance to build a maximal 100% RTP gambling game and profit by charging the players periodically.
- Core player plan. The platform can also reward users for their high activity or good scores.
- Network service provider plan. The value-added network service providers like storage providers, and third-party service providers can also be rewarded by Faireum based on the volume of contributions they have made to the network.

Other plans can be introduced at a later stage by Faireum as deemed necessary for intensification purposes.

The revenue is dependent on how many users participate in the platform, the number

of active users and the frequency of betting activities per user. Faireum will continuously develop the platform and infrastructure, and keep focusing on a number of key strategic areas; raising consumer awareness, increasing the number of developers and network supporters.

Progress in those areas, leading to the successful adoption of the Faireum platform, will be best achieved by communicating a compelling proposition for players, educating the general public, trade, and government bodies on the benefits of our technology, and advancing research and product development.

Faireum believes that progressive regulation can lead to a fairer and safer gaming experience for customers. Given the growing concern of many gaming regulators over fairness and player protection, many, such as the Malta Gaming Authority, have indicated their willingness to explore blockchain and assist with licensing.

Faireum will continue to procure licenses in a number of top-tier regulatory jurisdictions and will continue to work with regulators, particularly (but not exclusively) with those who have stated their desire to establish blockchain-friendly frameworks by either introducing new legislation, amending existing legislation or running regulatory sandbox projects.

Our strategic plan also features an initial learning phase which enables us to analyze the technological, commercial and practical impacts of the platform before scaling the network with smaller and larger game operators.

9. Market Analysis or Competition

9.1 Existing Competitors

For an emerging market, there isn't any major competition yet. There are currently two players in this market. They are building a prediction market on top of the Ethereum blockchain. Augur was the first to launch and currently has a market cap of \$175m, its competitor is Gnosis, which has a market cap of \$133m. But both of these companies are not pure betting companies.

Other possible competitors of Faireum include:

- Trueflip
- Vdice
- Casino.dao
- FUNFAIR

All Competitors are based on Ethereum ERC-20 standard, but building a betting platform based on the Ethereum blockchain has certain disadvantages.

9.2 Comparison with other technologies

9.2.1 Ethereum

Ethereum is currently the most popular blockchain and running the most DApp. Though a lot of gambling and guessing games are running on Ethereum, its lack of management makes it an inefficient platform for the gambling industry. Its main problems are:

- One can only bet with Ether or the even less stable ERC tokens, which means that even if you win the game, because of the extreme shrinking of the token price, you may still lose money.
- There is no dedicated protocol and client to define and host the games, resulting in poor user experience.
- The technical barrier is high and average users cannot just plug and play.
- There is no enterprise solution for casino and online games.
- The Ethereum blockchain lacks the flexibility to host a platform like Faireum.
- The Ethereum platform does not support a Random Number Generator.

9.2.2 Enterprise Operation System (EOS)

This is the platform with the rapid growth of Dapps for gambling. With its own performance and tokens in EOS, many popular gambling games have been deployed to this platform. But many major problems still exist in this system:

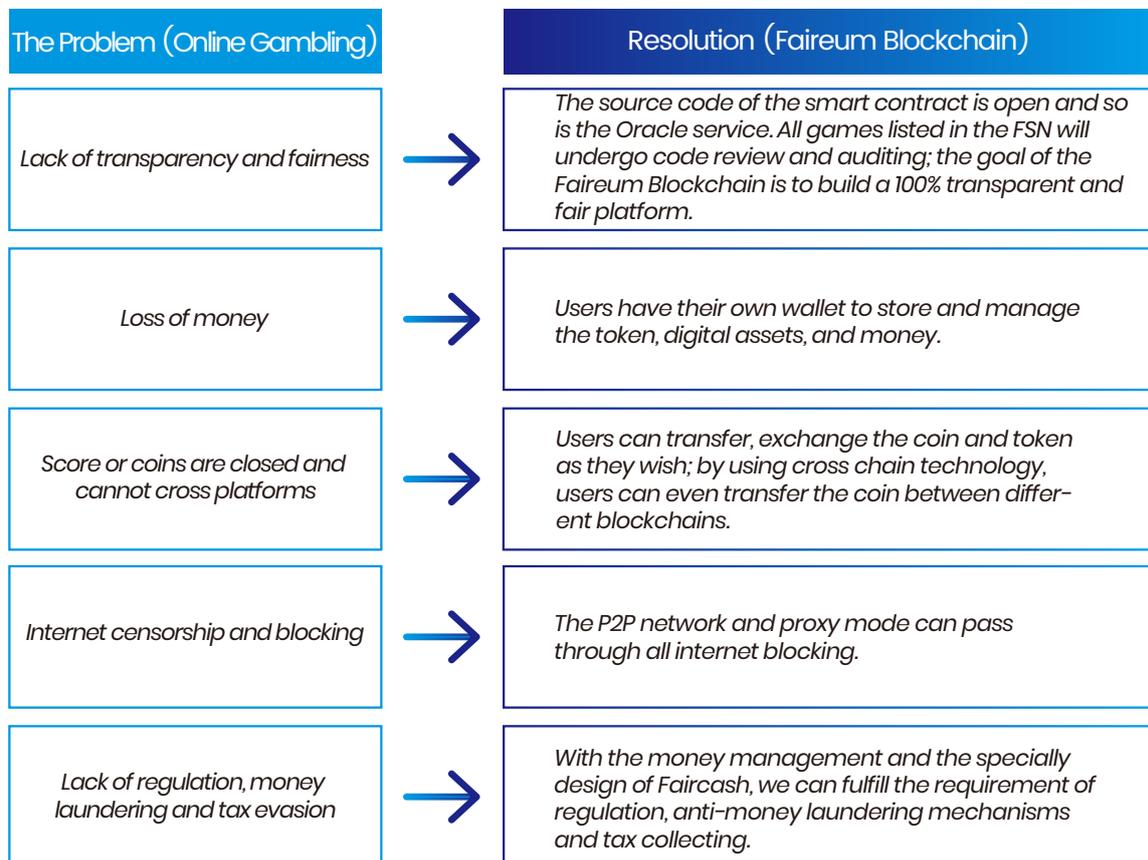
- One can only bet with EOS or EOS token.
- The user will pay more attention to the use of EOS wallet and function instead of the game itself.
- The technical barrier is high and the average user cannot just plug and play.
- There is no enterprise solution for casino and online games.
- Lack of gambling protocols and security protocols may cause hacking of user's assets.

- Lack of RNG support.

The Faireum Blockchain network proposes a solution for all the above issues. With cash management and FairCash, users can play with 'real' money; the FSN is the user friendly game center dedicated to gambling, lottery and guessing game formats; the average user can just download the app to their mobile phone or access through a browser to play the game instantly; the integrated B2B solution can provide a very flexible score and online chip system for casino and online games.

9.2.3 Online Gambling

There are still a lot of online gambling games running on centralized systems but they also have a lot of problems. Here we list the problems of online gambling games and our solution.



10. Token System

1.2 billion Faireum tokens will be issued during the Presale and the main token sale event. Each Faireum Token will initially be mapped into one corresponding ERC20 token on the Ethereum ecosystem as the Faireum ecosystem is being developed.

Once the Faireum ecosystem is released, there will be three major participants in the Faireum token economics: users, network supporters (nodes), and developers. Faireum will also build a marketplace on FSN for listing games and Dapps.

Before the public release version of the Faireum blockchain, all Faireum tokens will be minted based on the ERC20 standard on Ethereum. In the first release version of Faireum, the genesis block would produce the same amount of coins for 1:1 exchange between Faireum and Ethereum. Faireum tokens on the blockchain will be the main circulating token for our gambling ecosystem. Accompanied by the functional improvement and the incorporation of partners, the application of Faireum tokens will be diversified.

In the future, Faireum token in the Faireum blockchain will become the native currency of the Faireum Environment.

10.1 Token Distribution

Token Distribution	FAIRC TOKEN	Percent
Total supply	1,200,000,000	100%
Private	60,000,000	5%
Pre ICO	120,000,000	10%
Public ICO	480,000,000	40%
Reward funding pool	240,000,000	20%
Marketing/Partnership/Airdrop & Bounty program	120,000,000	10%
Team/Developer/Advisor	120,000,000	10%
Founders	60,000,000	5%

Private: 5% of tokens have already been sold to private investors.

Pre ICO: 10% of tokens sold in the pre-ICO guarantee that investors receive the highest discount.

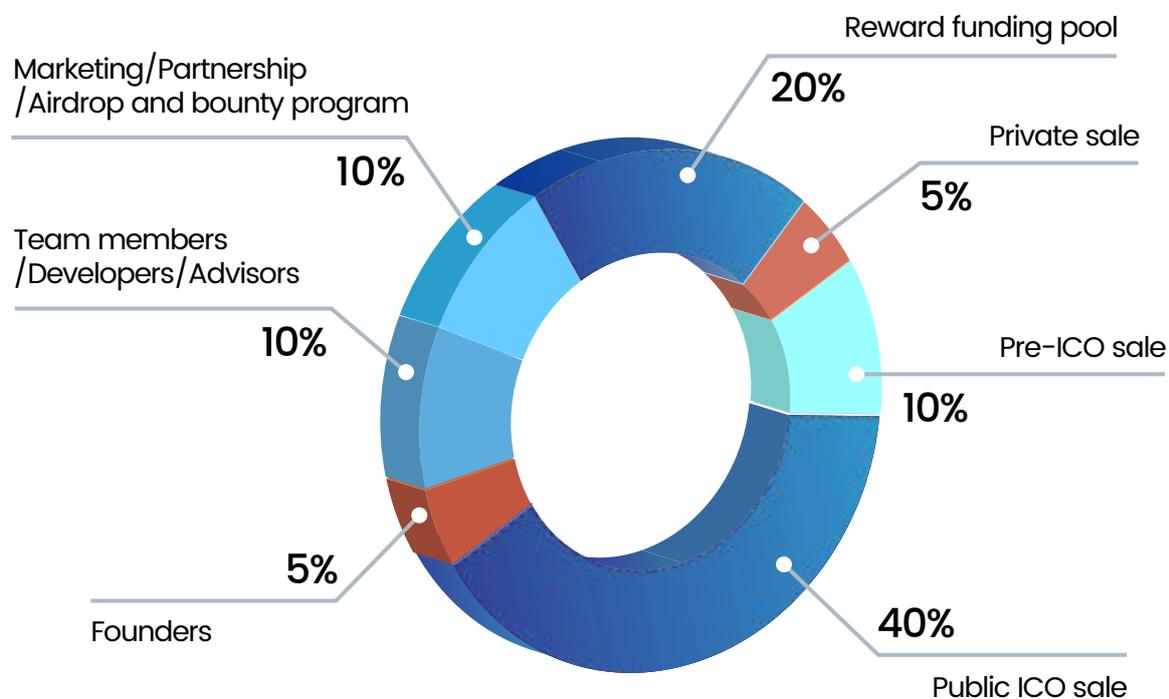
Public ICO: 40% of tokens will be taken for the public ICO sale.

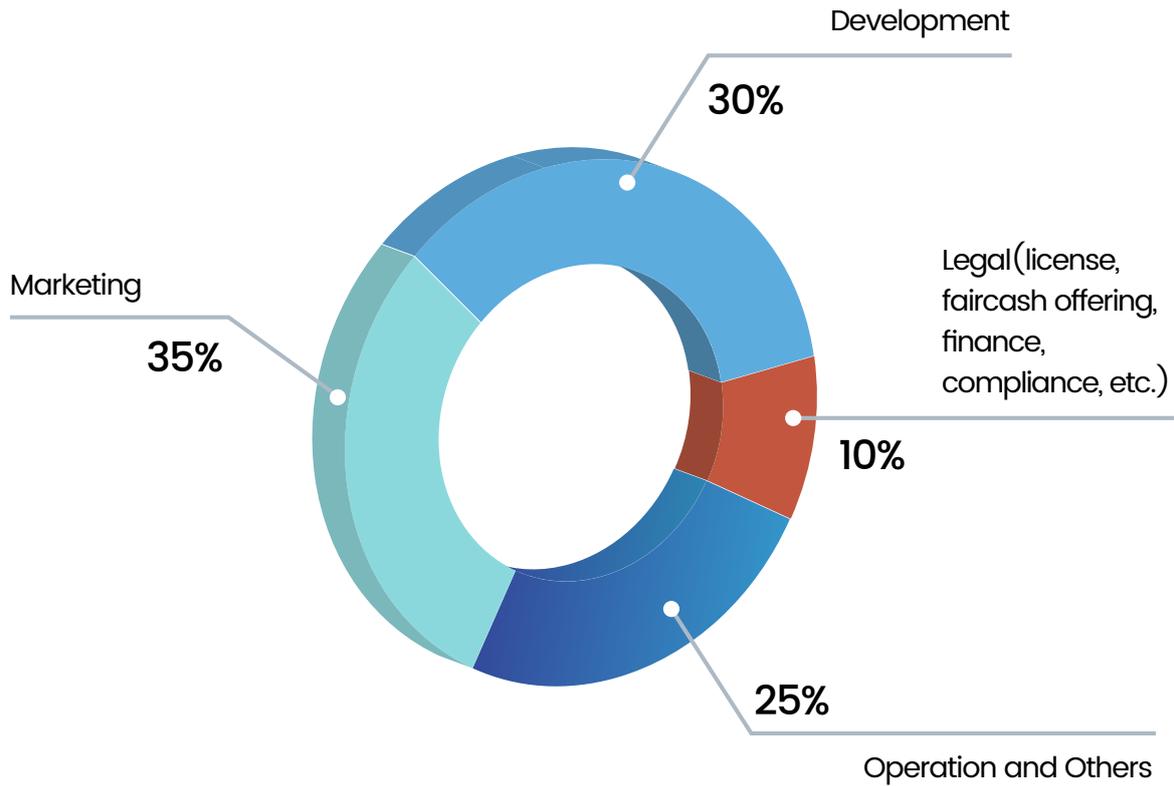
Reward funding pool: 20% of tokens will be used for the Reward funding pool that rewards the players or developers in Faireum, these tokens are not for sale and will be locked at least one year till to the first release version of the Faireum blockchain.

Team/Developer/Advisor: 10% of tokens will be locked where half of them will be locked 6 months and another half will be locked 1 year.

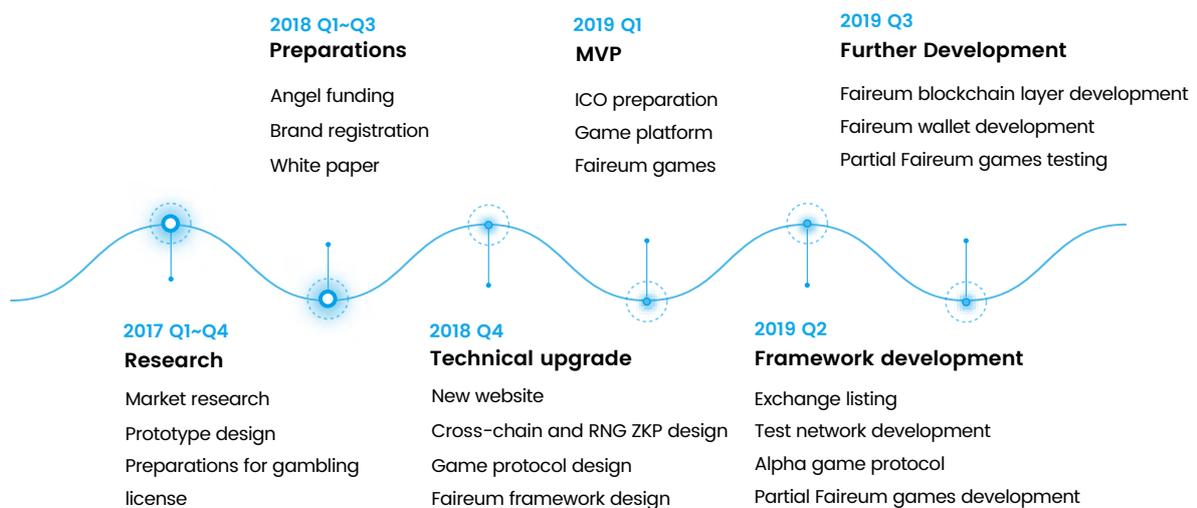
Marketing/ Partnership/Airdrop and Bounty program: 10% of tokens will be used for Marketing/ Partnership/Airdrop and Bounty program.

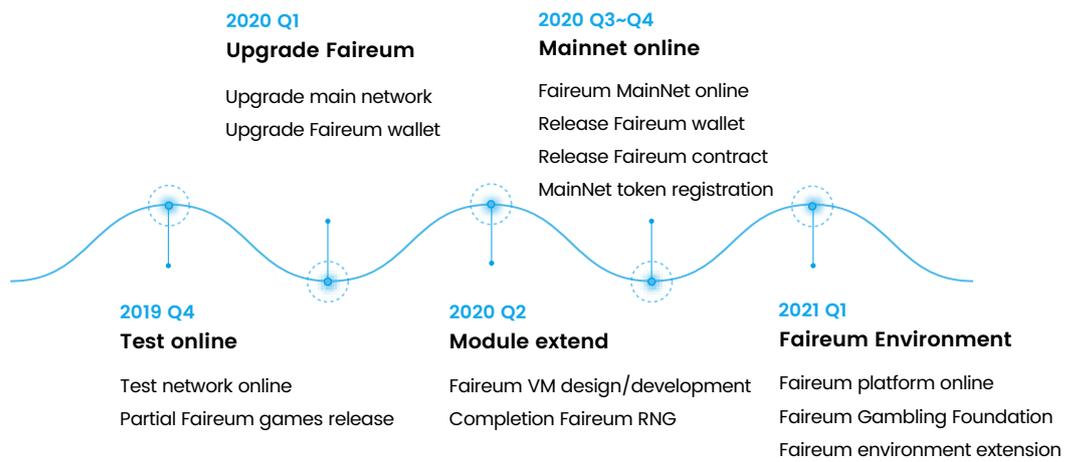
Founders: 5% of tokens will be locked 1 year.





11. Roadmap







Faireum

Faireum Foundation Limited

60, PAVA LEBAR ROAD,
#08-55, PAVA LEBAR SQUARE
SINGAPORE 409051

www.faireum.io