



# White Paper

*Instant profit-sharing gambling platform*

*DRAFT*

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*BetDice.one*

## Abstract

BetDice is a profit-sharing gaming platform on the EOS.IO blockchain. Thanks to the ecosystem of the blockchain, we are able to build a brand-new gambling platform, offering a safe, trustless and borderless gambling system. All our games are provably fair and maintained by the blockchain. Our DICE token allows holders to receive dividends from game profits on our platform. Cross-platform allows our users to play anytime and anywhere.

The BetDice team has extensive experience as a mobile game developer on Android, IOS and Web. There are a lot of DApps on the blockchain, but we believe our experience developing, operating and marketing games will allow us to outperform our competition.

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# 1 Introduction

We started developing web games in 2010. In 2012, as the industry began trending towards mobile, we turned into mobile game developers. We have designed, developed, operated and marketed our games without any third party involvement. As a result, we have gained extensive experience about gaming, including how to attract publicity and users, how to retain users, and how to ensure the longevity of the game. Over several years, we achieved more than 1M active users and over 10M total downloads.

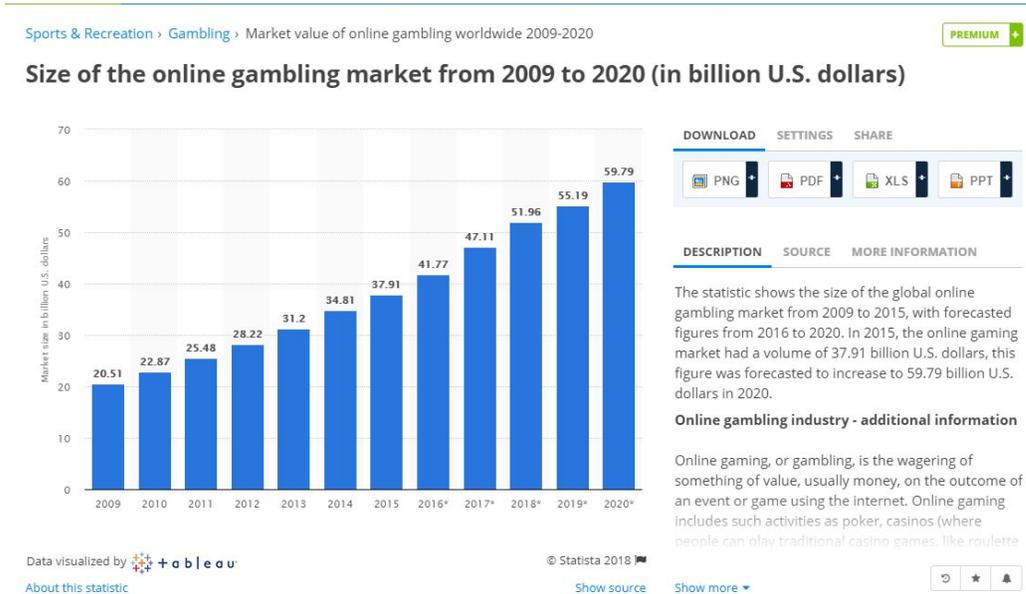
We have been deeply involved in the cryptocurrency industry since 2015. Although this transition creates challenges, it also allows us to develop games that are unique, and that differentiate us from our competitors. This also allows us to become leaders in the market. We launched a mining pool and contributed to the network by fixing daemon bugs and providing feedback. As we watched the industry grow, we knew we could add something exciting and new to the network. People love games and value simplicity, and are generally averse to complexity, high risk and high entry cost. EOS.IO blockchain provides us a great platform to achieve our goals. Since the chain launched, we started planning and investigating the best way to develop here. We have read the code of the node implementation, building our own private endpoints, and working to provide a stable and secure network on the cloud. We took each step carefully until we fully understood the blockchain. Finally, we have launched our first project – **BetDice**.

BetDice is based on EOS.IO blockchain. It provides a trustless, profit sharing and high-performance gambling experience across internet. It addresses the shortcomings of both traditional online gambling platforms and other online cryptocurrency casinos, including high fees, slow deposits/withdrawal and lack of trust. We aim to be the largest cryptocurrency gambling platform by sharing our profits with our token holders. We welcome everyone to join us in helping to grow our community. We believe value is ultimately created by our users, not only our team or our proposal. Join us as we build a complete solution, including marketing and developing, that will benefit every token owner.

## 2 Market Overview

### 2.1 General Information

Online gambling includes activities such as poker, casino games, sports betting, bingo and lotteries. Among these, casino games and sports betting make up the largest share of the market. Casino games include roulette, dice, and slot machines. Some indicate that the volume of online gambling will reach 59.79 billion dollars in 2022<sup>1</sup>.



showing the size of the global online gambling market from 2009 to 2015, with forecasted figures from 2016 to 2020

<sup>1</sup>1. Size of the online gambling market from 2009 to 2020 (in billion U.S. dollars) <https://www.statista.com/statistics/270728/market-volume-of-online-gaming-worldwide/>

## 2.2 Problems with traditional casino

Traditional casinos suffer from many difficulties and drawbacks which makes them hard to attract users and be long lasting. We believe that operating on the EOS.IO blockchain will allow us to avoid these problems.

### **Problem 1: Slow deposits and withdrawals**

Traditional casinos require users to change chips or top up a certain amount of money. You may need to wait for a long period of time to get back the cash afterward. The progress is slow. This is unreliable, and results in resistance for the first play.

Here are some examples of common issues:

1. Easy to cash in but hard to cash out.
2. Incorrect balance shown.
3. No audit.
4. Slow to cash in and cash out; users may need to wait for several hours to take one action.
5. High withdrawal fee.
6. Lack of trust for every new user.

To tackle these problems, we accept any EOS-based tokens for our games. EOS allows users to spend their coins directly without any deposit/withdrawal. Providing instant payment and payout allows for complete safety and confidence. It also reduces the risk of bugs. All transactions are recorded on the blockchain, so everyone can easily audit the records.

### **Problem 2: Tokens are valueless**

Some traditional casinos issue tokens to their users. However, most of them are valueless due to lack of circulation and loyal users. Some issuers “pump and dump” their tokens to boost the price of a stock through recommendations based on false, misleading or greatly exaggerated statements. Also, some issuers are even “exit scam” after issuing the ICO.

To provide the most trustable tokens, we decided to launch the platform first. This allows us to demonstrate that we are working hard on the development and marketing for the ultimate success of the game. Our tokens are circulating on the market and exchange, instead of being completely under our control. The token owner has full control regarding how they spend their coins. By sharing our profits, we create a foundation value for the coins – the value will never be zero. By issuing most of the tokens by users playing the game, we ensure we have enough profit – so our profit will never be zero. We are reserving just a little part of the tokens for ourselves – this ensures development never stops because we have a vested interest in the success of the token. We held a small and short token sale to prove that we are not going to scam, we just want to start the project with enough budget to allow for our success.

### **Problem 3: Games are not provably fair**

Many active casinos are not provably fair<sup>2</sup>. What that means is that there is no way the site can cheat you by picking a lottery winner who they favor. All winners are picked randomly.

All our games are fully transparent and verifiable fair. They are smart contracts executed by the EOS.IO blockchain and maintained by all producers. We cannot modify any part of it while it is released. To be provably fair, the way this works is that each play is calculated using 3 parameters - the server seed, client seed and nonce.

We show you the client seed and nonce that will be used for your next roll along with a hash of the server seed. You can also change the client seed if you want. The server seed is the only part that is kept in secret before rolling the dice. Then after you roll, we will send you a receipt showing you the server seed that was used, and you can verify that this was the same server seed that we said we were going to use before the roll by checking if the hash of this seed matches the hash that we showed you before the roll.

### **Problem 4: Low Security**

Traditional online casinos focus more on collecting personal information. Users need to provide their real name, passport number, bank account details or more to do verification and payout. All these sensitive details are stored in their servers which are unsafe as hackers may be able to achieve access or there may be information leakage.

By using EOS Scatter wallet, the above problems can be solved. Users signup and login to our platform through Scatter. All your data is held on your own device. You have your own rights to decide whether giving your private data or not.

### **Problem 5: Bot Attacks**

The most common attack that an operating online casino may face is bot attacks. Especially for smart contract, the user is able to push an action directly to the blockchain without using our gaming platform. Also, by creating lots of bots, they can get the benefit from any event we organize. It's definitely unfair to any other human players, and most of the rewards go into the attacker's pocket, which is opposite to our aim.

To address this situation, we will implement a checksum<sup>3</sup> mechanism to confirm all players are pushing actions on our platform. Attackers are hard to forge the request because checksum is calculated in private. It would require a lot of work to understand or even brute force the answer. This allows us to reduce the number of bots and protect everyone's rights.

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<sup>2</sup> [https://en.wikipedia.org/wiki/Provably\\_fair](https://en.wikipedia.org/wiki/Provably_fair)

<sup>3</sup> <https://en.wikipedia.org/wiki/Checksum>

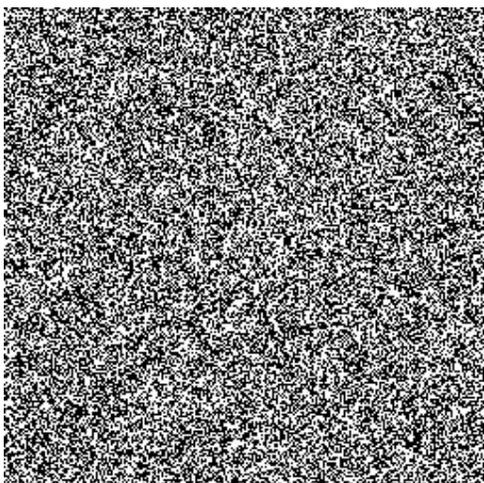
## **Problem 6: Weak security on the random function**

If random function is not designed well, it can be vulnerable to hackers. Random is the hardest part on modern computers.<sup>4</sup> Some developers lack experience to generate true random values.

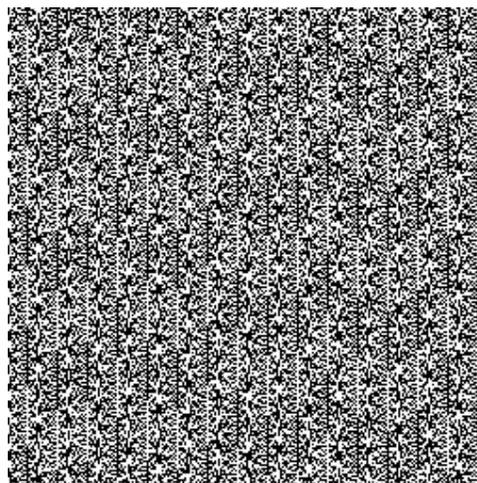
Here are some common mistakes:

1. Using any deterministic value (time, user id) as a seed to generate random value.
2. Using not equal distributed random values.
3. Using easily estimated seed for random.
4. Using hashing functions to generate pseudorandom number.

For an online casino, true random function is very important. Selecting a weak random function is unfair to users because although the probability is correct, the output is biased.



True Random Function



Weak Biased Random Function

To address this issue, a cryptographically secure pseudorandom number generator<sup>5</sup> is used to generate a random value. This makes it difficult for attackers to guess or estimate the future value, which provides the best safety to our platform and our token owners.

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<sup>4</sup> [https://en.wikipedia.org/wiki/Pseudorandom\\_number\\_generator](https://en.wikipedia.org/wiki/Pseudorandom_number_generator)

<sup>5</sup> [https://en.wikipedia.org/wiki/Cryptographically\\_secure\\_pseudorandom\\_number\\_generator](https://en.wikipedia.org/wiki/Cryptographically_secure_pseudorandom_number_generator)

## 3 BetDice Platform

There are many gambling platforms in the market. We are differentiating ourselves by supporting multi-currency, by implementing profit sharing, and by developing a variety of games. We also provide the most stable servers by covering with CDN, being protected by cloud firewall. We use Smart AI to easily identify suspicious activities. Cross-platform also lets our users to enjoy our games anytime and anywhere.

### 3.1 Multi-Currency

There are many different coins on the EOS.IO blockchain. We are going to support each coin on the platform, not only the main EOS. This allows users to freely choose any coin they want to bet. Also, we support betting with DICE tokens, which means users can make use of the tokens not only for sharing the profit, but also for playing our games.

### 3.2 Various Games

We are going to develop various types of games, not only dice betting game. Our plan is to release 1-3 games each month. We aim to provide a complete win-win solution among all token holders, trying to develop different kinds of games to the platform, making it long-lasting. This protects our tokens and ensures we will be able to reach our goal – to build the world's first instant profit-sharing gambling platform.

### 3.3 Private EOS Endpoints

There are many public endpoints outside, but none of them are stable because an EOS node can only run on a single core<sup>6</sup>, there is no multithreading implementation. It's hard to scale up if the team is lacking experience. Therefore, building private load balanced endpoints are a must.

To accomplish this, we must use a load balancer and set up many single core servers behind to run only exactly one EOS node per server. However, due to extremely short block time of EOS, all nodes behind may not be synchronized. Some of the nodes may be outdated, causing the head block number is jumping forward and backward. To solve this, we must implement our own custom load balancer which needs professional knowledge and experience in this field.

Luckily, the BetDice team has several years of managing servers and operating data centers, so this is not a big challenge for us. To provide a stable and high-performance service to our users, we have implemented our own private endpoint with AI load balancing. By selecting the best backup node and filtering the bad and outdated nodes automatically, we can provide up-to-date and scalable endpoints, effectively making a single core EOS official node running on many cores.

Although maintaining our own private endpoints creates extra cost, we believe it's necessary to provide our users with the best playing environment.

### 3.4 Instant Betting Result

Data on blockchain is maintained by distributed nodes. As data syncing across nodes takes time, block can be reversed even though it was accepted previously. Although EOS.IO blockchain has a very short block time(0.5s), a block can only be confirmed not to reverse after ~180s. As game results are processed on contract, theoretically, the safest way to publish the game result is to publish it only after the block is confirmed. However, this could lead to a very long waiting time and very bad user experience.

We devised a better solution. The result of the game is determined after the bet is placed, we can actually calculate the result before it resolves on the blockchain. So, while we are waiting for the blockchain to resolve the bet, the result can be published to the user at the same time. Our servers will still keep track of the result from the blockchain and confirm that it was really resolved. From the user perspective, bet result can be known near instantaneously while still keeping the bet and funds safe. This provides a great user experience. Users can have more time to play as the wait time is shorter.

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<sup>6</sup> <https://github.com/EOSIO/eos/issues/4046>

### 3.5 Dynamic Max Bet

By setting max bet, we can prevent from running out of bankroll. Allowing a higher max bet can benefit big players and allow them to play with many strategies. Although probability and numbers are calculated accurately, players can still consecutively win. To prevent bankruptcy, some platforms set a fixed max bet in ratio to their bankroll. For example, they will set 1000 as a cap for each bet if they have 100K bankroll, leaving a room to some lucky players. However, it's hard to raise the max bet because we need lots of bankroll to do this. We have another way to accomplish this:

$$Allowance = \text{floor}\left(\frac{\log \log (Target \text{ Expected } Value)}{\log(Expected \text{ Value})}\right)$$

$$Max \text{ Loss} = \frac{Bankroll}{Allowance}$$

$$Max \text{ Bet} = Max \text{ Loss} \times \frac{Expected \text{ Value}}{(1-Expected \text{ Value})}$$

From our formula, dynamic max bet can satisfy different players. They can bet large amount with low expected value, and small amount with high expected value. On average, the max bet is raised ~100x with the same bankroll using this mechanism. We don't need to set the max bet manually. Our system will protect us from going bankrupt automatically.

### 3.6 Achievement

Achievement is a good way to increase users' engagement within our platform. We will have several missions for users to complete. Achievements then can be unlocked. These missions can encourage our users to experience different features which they might not try on their own initiative. Achievement can also be a great approach for designing missions to have greater user retention rate. Users will be more willing to keep playing in our platform.

## 3.7 Leaderboard

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*“Wanting to win” versus “wanting to avoid losing” is a subtle yet crucial distinction; Murayama and Elliot’s (2012) set of meta-analyses found the effects of competition depend on this distinction in the minds of players. When someone wants to perform better than others, they tend to benefit from competition. But when they want to avoid performing worse than others, competing tends to reduce their performance.*

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Quoted from: <https://medium.com/practical-motivation-science/how-to-motivate-with-leaderboards-da5a461fb2f6>

Leaderboard is designed based on self-determination theory. The theory suggests that people are willing to participate in activities to fulfill their basic psychological needs. Leaderboard can satisfy one’s vanity. Users will have a clear goal when playing in our platform. They would like to get the number ONE ranking in the board. Moreover, users can know the progress they are making when checking the leaderboard. Also, they can interact with other players. We believe competition can motivate users to achieve more. There will be a real-time leaderboard displaying next to the game showing top users in that currency.

### 3.8 Lottery

Lottery is another way to retain users in our platform. Whenever a user places a bet in any game, 10% of the fee will be taken and placed in the lottery pot. This can confirm our pot will never short of tokens.

Users will get 1 lottery ticket for 1 token they bet. Users can also buy 1000 tickets with 1 token. 80% income of selling tickets will be placed in the lottery pot. The rest will be the profit.

Every ticket will be assigned a number in sequence. Ten lottery tickets' number will be picked every hour, and the owners will share the lottery pot as the distribution shown below.

|                      |              |
|----------------------|--------------|
| 1 <sup>st</sup>      | 50.00000000% |
| 2 <sup>nd</sup>      | 25.00000000% |
| 3 <sup>rd</sup>      | 12.50000000% |
| 4 <sup>th</sup>      | 6.25000000%  |
| 5 <sup>th</sup>      | 3.12500000%  |
| 6 <sup>th</sup>      | 1.56250000%  |
| 7 <sup>th</sup>      | 0.78125000%  |
| 8 <sup>th</sup>      | 0.39062500%  |
| 9 <sup>th</sup>      | 0.19531250%  |
| 10 <sup>th</sup>     | 0.09765625%  |
| Goes into next round | 0.09765625%  |

Since our platform supports multi-token, each token will run its own lottery. With this design, all users have a chance to win a big prize when they bet in all of our games, no matter if they win or lose.

This encourage users to stick with our platform and helps to retain users.

### 3.9 Lucky Draw

Every user can roll a number to win free EOS daily without any cost and any risk.

|             |             |
|-------------|-------------|
| 0 - 9885    | 0.0005 EOS  |
| 9886 - 9985 | 0.0050 EOS  |
| 9986 - 9993 | 0.0500 EOS  |
| 9994 - 9997 | 0.5000 EOS  |
| 9998 - 9999 | 5.0000 EOS  |
| 10000       | 50.0000 EOS |

We believe it is a good strategy to increase the user engagement and attract a large number of users. Although we need to pay tokens for the prizes, we feel this is relatively inexpensive in comparison to other marketing campaigns.

$$\frac{9886 \times 0.0005 + 100 \times 0.005 + 8 \times 0.05 + 4 \times 0.5 + 2 \times 5 + 1 \times 50}{10001} = 0.0068$$

Also, giving free tokens to users is better than spending on advertising campaign, because it can increase both brand and user loyalty and retain our user base. The customer lifetime value<sup>7</sup> can be increased a lot to generate more profit at the end.

We will review and adjust the rewards based on the statistics collected over time to ensure that the rewards are attractive to users but also profitable to us.

<sup>7</sup> [https://en.wikipedia.org/wiki/Customer\\_lifetime\\_value](https://en.wikipedia.org/wiki/Customer_lifetime_value)

## 3.10 DICE token

Users playing continually and happily on the platform is our motivation. We do love to share our profit instantly with our users. However, doing instant payout is a big challenge which includes high server workload, high cost of network fee and dramatical change of the balance. After thorough investigation, finally we found a good way to do instant payout. We hope our users can immediately receive the profit without waiting and worrying. We have designed a completely new token to address this issue – **DICE**.

**Max Supply: 8.8B**

### **Why large max supply?**

We decided to use a big number for marketing purpose, because many users like big numbers. To be successful, we need to focus more on marketing, which is ignored by many token issuers. It doesn't have any negative effect since all profit sharing is based on proportional. It also makes it easier for instant payouts.

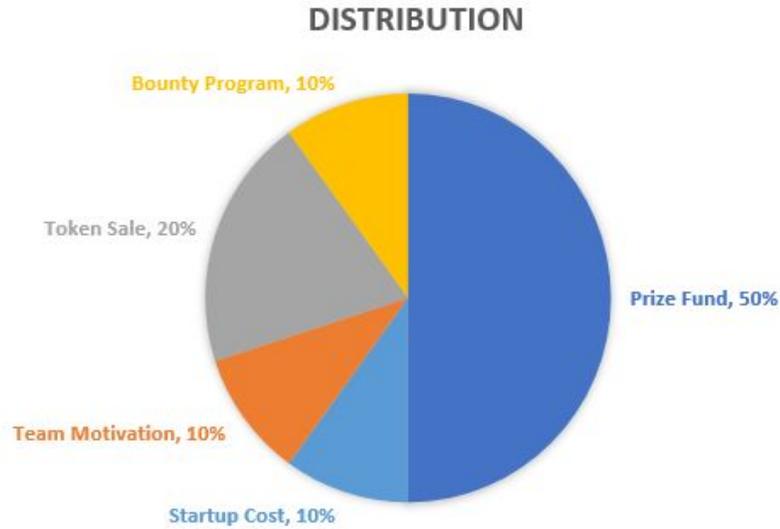
### **What is the meaning behind the name?**

The origin of the name DICE is not because of "Gambling". It's because "DICE" symbolize "Destiny" and "Fortune". Our life is just like a dice game; each step forward contains an element of randomness and luck, and the future is decided through the result of this randomness. Also, DICE, like life, is fun and exciting because sometimes you have good luck, and sometimes you do not.

### **How to create value for DICE?**

Issuing tokens without any value is meaningless. To create the value, we are launching a completely brand-new gambling platform. All token owners can share in the profits of the platform. We aim to create a completely win-win solution and hope DICE becomes the most valuable token on the exchange.

## **Detailed Distribution**



### **Prize Fund (50%)**

We believe prize fund is most important in our business because it motivates our users to bet. The more tokens our users bet, the more profit we make, and the more our token owners receive in dividends. It is similar to bitcoin mining – if you want to earn more, you need to contribute more, that’s “betting is mining” strategy. That’s a completely win-win solution. We will issue 100 tokens for every EOS bet, and the reward gets halved after every 5% tokens issued in this manner.

### **Startup Cost (10%)**

Operating a gambling site needs huge cost. This includes server fees, network fees, marketing fees, and so on. 1 token will be issued as the startup cost for every 10 tokens issued from the total supply to confirm that no large amount of tokens are being issued at the same time. We believe this can protect everyone’s rights. We will not stake these tokens for profit sharing.

### **Team motivation (10%)**

We will keep developing games, with a goal of 1-3 every month. To encourage and compensate our team, we will start giving them tokens once 50% of all tokens are issued. 2 tokens are issued of every 10 tokens issued overall to confirm that no large number of tokens are issued at the same time, to protect everyone's rights. Also, we will not stake it for profit sharing in the first half year.

### **Token Sale (20%)**

Operating a gambling site needs a huge budget. We need to secure our servers for providing the best and the safest environment for our users. We need to build a private EOS endpoint to avoid the instability of a public endpoint. Managing wallets and doing instant payout is also a big challenge.

We will launch the token sale for 1 week. Any remaining tokens will be turned into the team motivation fund. After the token sale, profit sharing will be started, and token owners can claim their dividends. Also, we have contacted exchange platforms and our coin is confirmed to be listed after the token sale. For every EOS, we will issue 10,000 DICE to the buyer. Therefore, 176,000 EOS will be funded in total.

We are going to use the funds raised as follows:

1. The maintaining cost of the platform.
2. The maintaining cost of the private high-performance endpoints.
3. The network fee, mainly staking CPU and NET, buying RAM.
4. Larger bankroll to attract more big players.
5. Initial cost of developing more games.
6. Marketing cost.
7. Law consulting fee.

Based on our latest estimation, we have to stake at least 30K+ EOS to provide the best user experience due to the unstable of EOS Network.

## **Bounty Program (10%)**

### **Signup Rewards**

For a limited time, we are awarding 1000 DICE to our users upon signup. We believe a signup reward is necessary for attracting publicity.

### **Bug Reports**

We need to confirm that our contract is perfect for doing our business. We won't allow any bugs. For every bug report, we are going to reward the reporter 1,000 DICE. For every serious bug report, mainly causing loss of platform, we are going to reward the reporter 100,000 DICE.

### **Referral Program**

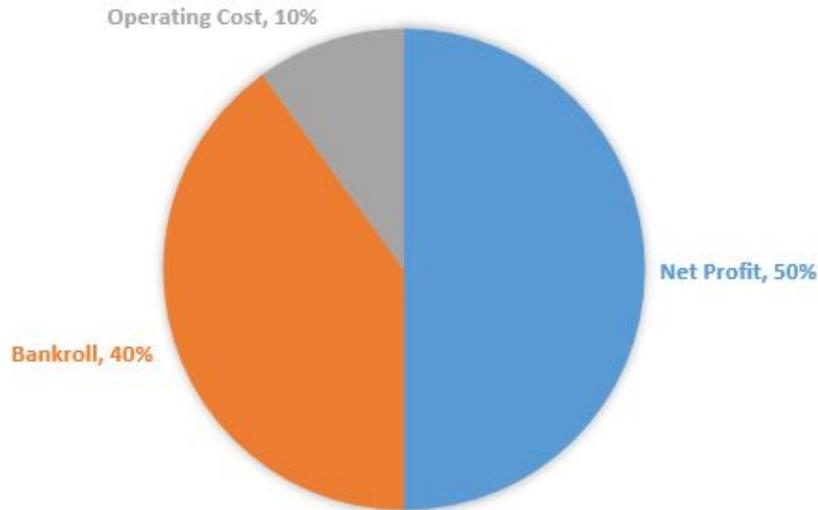
Implementing a referral program is highly valuable as it doesn't cost much to acquire new users. Offering a small incentive can allow users to share the platform to their friends. Word of mouth marketing can be an incredible reputation tool. We believe this is instrumental to the growth of the platform. Details will be released soon.

### **Events**

By organizing events, we can boost the revenue efficiently. It also can save the cost of marketing because users will promote it by mouth by mouth. We believe events can effectively draw public attention, as well as allowing users to have more fun on our platform and to grow our user base.

### 3.11 Revenue usage and Profit Sharing

For long-term development, we have to expand our business, and a good strategy is needed. Adjusting the usage is not easy. We need to preserve power to compete, but at the same time, we need to make everyone happy and be attractive. After much research and deep investigation, the revenue will be distributed as follows:



#### **Net Profit (50%)**

We hope all our token holders can share in our success. We are truly grateful for the contributions they have made. We would like to keep them happy, interested and motivated. We really would like to share the wealth with them. For that reason, we decide to retain the largest part of our profit as the prize. Instant payout will be adopted. For more details, please refer to Section 3.12 Instant payout.

We aim at providing a win-win gaming platform integrated with entertainment and profit sharing.

## **Bankroll (40%)**

A bankroll should sufficiently bear the downward side of the variation that is expected for a particular stake. It is indispensable for the platform to withhold a certain amount as the funds.

A well-known double up betting strategy is likely used by most of the players as they think this would always win. Actually, in mathematics, it is a high-risk strategy, and is flawed<sup>8</sup>. Losing 10 rounds in a row is not as difficult as we imagine. The below table shows the statistic when choosing 50% as the expected value and starting with \$1:

| <b>Round</b> | <b>Wager</b> | <b>Total Wager</b> | <b>Expected Value</b> | <b>Expected Payout</b> | <b>Payout without tax</b> | <b>Net Profit</b> |
|--------------|--------------|--------------------|-----------------------|------------------------|---------------------------|-------------------|
| 1st          | \$1          | \$1                | 50%                   | \$2                    | \$2                       | \$1               |
| 2nd          | \$2          | \$3                | 75%                   | \$4                    | \$4                       | \$1               |
| 3rd          | \$4          | \$7                | 87.5%                 | \$8                    | \$8                       | \$1               |
| 4th          | \$8          | \$15               | 93.75%                | \$16                   | \$16                      | \$1               |
| 5th          | \$16         | \$31               | 96.88%                | \$32                   | \$32                      | \$1               |
| 6th          | \$32         | \$63               | 98.44%                | \$64                   | \$64                      | \$1               |
| 7th          | \$64         | \$127              | 99.22%                | \$128                  | \$128                     | \$1               |
| 8th          | \$128        | \$255              | 99.61%                | \$256                  | \$256                     | \$1               |
| 9th          | \$256        | \$511              | 99.80%                | \$512                  | \$512                     | \$1               |
| 10th         | \$512        | \$1023             | 99.90%                | \$1024                 | \$1024                    | \$1               |

Although the actual payout is the same as expected one, you need lots of money to bet for a dollar. Once you have over the bankroll, you will be bankrupt. If the game sets a cap, it is very difficult to play this strategy.

However, it is the same on the casino side. So, once we don't have enough bankroll, we have to limit the betting amount to prevent using this strategy. The bankroll supports the betting limit. Larger bankroll means we can support higher betting limit, which allows users to bet at a higher amount. With a high limit, users can have more strategies for betting. This makes them feel good and keep playing, even at large amounts, and increase the odds of losing more eventually.

<sup>8</sup> <https://casinoandsportstalk.com/articles/does-the-bet-doubling-strategy-work.php>

Next, let's see what will happen if tax is added:

| <b>Round</b>     | <b>Wager</b> | <b>Total Wager</b> | <b>Expected Value</b> | <b>Expected Payout</b> | <b>Payout with 2% Tax</b> | <b>Net Profit</b> |
|------------------|--------------|--------------------|-----------------------|------------------------|---------------------------|-------------------|
| 1 <sup>st</sup>  | \$1          | \$1                | 50%                   | \$2                    | \$1.96                    | \$0.96            |
| 2 <sup>nd</sup>  | \$2          | \$3                | 75%                   | \$4                    | \$3.92                    | \$0.92            |
| 3 <sup>rd</sup>  | \$4          | \$7                | 87.5%                 | \$8                    | \$7.84                    | \$0.84            |
| 4 <sup>th</sup>  | \$8          | \$15               | 93.75%                | \$16                   | \$15.68                   | \$0.68            |
| 5 <sup>th</sup>  | \$16         | \$31               | 96.88%                | \$32                   | \$31.36                   | \$0.36            |
| 6 <sup>th</sup>  | \$32         | \$63               | 98.44%                | \$64                   | \$62.72                   | -\$0.28           |
| 7 <sup>th</sup>  | \$64         | \$127              | 99.22%                | \$128                  | \$125.44                  | -\$1.56           |
| 8 <sup>th</sup>  | \$128        | \$255              | 99.61%                | \$256                  | \$250.88                  | -\$4.12           |
| 9 <sup>th</sup>  | \$256        | \$511              | 99.80%                | \$512                  | \$501.76                  | -\$9.24           |
| 10 <sup>th</sup> | \$512        | \$1023             | 99.90%                | \$1024                 | \$1003.52                 | -\$19.48          |

You start losing money after the 5th round when tax is applied due to wrong calculation. We shouldn't only double the wager, we also need to consider the tax in the calculation to prevent this flaw. Still, there are many players who don't understand this flaw and keep playing.

There are many players betting all the time, but most of them are small players. By Pareto principle<sup>9</sup>, 80% of profit come from 20% of the players. If our betting limit is too low, we will lose that part of income.

Larger bankroll also means we can launch more games, which can attract more different kinds of players and generate more revenue and improve the competitiveness.

We need to grow the Bankroll as fast as possible to compete with others. We believe higher bankroll is essential to have a competitive advantage and do better in the long run. Therefore, we take more expense for bankroll purposes.

We will adjust the bankroll ratio as time goes on to ensure that we have enough bankroll to support our games, and also ensure we are attractive for big players. Due to the difficulties to share the bankroll across all games and the risk to be attacked, we need to separate the bankroll into different accounts and contracts. Therefore, we need more bankroll to support more games. We will adjust the bankroll ratio quarterly using the following formula:

<sup>9</sup> [https://en.wikipedia.org/wiki/Pareto\\_principle](https://en.wikipedia.org/wiki/Pareto_principle)

$$\min \left( 1, \frac{200000 \times \text{number of active games}}{\text{total bankroll}} \right) \times 40\%$$

Also, once the project comes to the end, all bankroll will go into dividends.

### **Operating Cost (10%)**

To improve competitiveness, we need to continuously develop new games. The more games we launch, the more revenue we can generate. We need to hire more talent and professional developers and to expand globally.

To provide the safest, most stable and best gaming experience platform, it is necessary to maintain our servers and network. This can be costly, but we aim to minimize the cost. Our goal, through our rich experience, is to ensure our setup can support tons of traffic and provide the best service with low cost.

Also, to be popular, promotion is indispensable. Instead of using a large amount of budget for advertising campaigns, we prefer to use a small budget to draw public attention through organizing events. As we are a decentralized gaming platform, we can organize contests easily, give away some tokens to newcomers, and coordinate with media for publicity.

## 3.12 Instant Payout

We would like our users to get, or at least accumulate, the shared profit without any action. Technically, sharing profit in this way can be very difficult. In order to share the profit instantly, we need to know the number of circulating tokens at the moment of profit sharing so that we can distribute the profit to all holders in ratio fairly. This can be achieved by taking snapshot of the EOS blockchain. However, as we need to share profit instantly, lots of snapshots are needed and this will give a very high workload to our servers. Sending tokens directly to token holders needs high CPU usage time too.

In order to tackle this problem, we design a new payout system. Users do not need to claim their payout frequently, but they still won't miss any. For all token holders who want to share the profit, they should stake their DICE token and then our system would accumulate the profit to them every hour. They can claim the accumulated rewards any time they want. We plan to share all profits from the platform, not only EOS, but all tokens that we support and earned.

$$\textit{Profit} = \textit{Current Bankroll} - \textit{Last Bankroll}$$

To calculate the profit accurately in a short period of time, we will take each hour as a calculation point. Once it is positive, we will take this as revenue and then process the distribution according to Section 4.10. Once it is negative, we will accumulate it to the next round until it become positive again and then process it. We could shorter the interval later. When the interval become a minute or even a second, that's instant payout.

By implementing auto payout, users can get the payout without any additional actions. Once users set the auto payout threshold, our system will automatically send the payout to their accounts if their balance is above the threshold.

If users would like to use DICE that is staked, they should unstack first. DICE would be refunded after 24 hours later. This can be decreased in the future. But we would set it to 24 hours at first.

This can greatly reduce the server workload that was needed to take the snapshot of EOS blockchain and can let us share the profit in a short period of time. Reducing the circulation of tokens will also increase the price of the tokens.

# 4 Roadmap

