

ICONbet

The First DAO of the ICON Republic

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Introduction

As the blockchain industry continues to grow, it is becoming clear that provably fair gaming, where users can transparently select their odds, open-source smart contracts execute transactions, and ownership of the platform is decentralized, has earned a place as a strong use-case for blockchain technology.

The advancement of blockchain technology has not only given rise to provably fair casinos, but also to a different type of player. At a brick-and-mortar casino, the player expects to turn \$100 into \$200. Based on observations of other blockchain games, however, the expectation of most players in blockchain casinos appears to be more about earning a piece of the casino itself even at the cost of losing money.

Blockchain has also introduced a new type of organization – a distributed network of autonomous shareholders commonly referred to as a DAO (Decentralized Autonomous Organization). A DAO has no legal corporate entity and it is not regulated by a specific governing body. It follows the rules of the blockchain on which it exists and is managed by a set of autonomous smart contracts. DAOs encourage innovation since anybody with a vested interest in the DAO is incentivized to directly contribute to the growth and success of the organization.

These industry trends led to the creation of ICONbet, the first DAO to be created on ICON. ICONbet will be giving away 80% of the ownership of ICONbet to players, while keeping 20% for the original team to incentivize continued development. In accordance with ICON's theme of Delegated Proof of Contribution, those that contribute most to the volume on ICONbet will earn the greatest amount of ownership of the project. The ICONbet team looks forward to seeing the DAO come to fruition through the active participation of the ICON community.

Market Opportunity

Decentralized Applications focused on gaming have been some of the most successful applications in the blockchain space thus far. When [analyzing DApp usage](#) in Q1 2019 from other blockchains, 94% of TRON's DApp transaction volume and 82% of EOS's DApp transaction volume came from gaming DApps. ICON did not have any live gaming DApps at the time of writing, which presented an excellent opportunity for the ICONbet team to replicate such success on the ICON blockchain.

Why ICON Republic

This project is built on the ICON public blockchain for two key reasons: the DApp Booster Program and the transaction fee structure.

DApp Booster Program: The DApp Booster Program (DBP) is an on-chain incentive structure for DApps that build on the ICON blockchain. While all other protocols give block rewards directly to nodes participating in consensus, ICON's blockchain gives rewards directly to four different parties: voters, DApps, EEPs (Ecosystem Expansion Projects), and P-Reps (nodes participating in consensus on ICON). ICON incentivizes voters to vote for their favorite DApps, and DApps receive a greater portion of block rewards the more votes they get. This factor gave the ICONbet team the ability to give away a greater (80%) portion of ownership since the DBP can subsidize some of the costs.

Transaction Fee Structure: ICON will be implementing two key features to the transaction fee structure, Virtual Step and Fee Sharing. Fee Sharing allows developers to cover a portion of the transaction fees for the users. Virtual Step is essentially a transaction fee credit system, where the smart contract developer receives a certain amount of free transactions in exchange for locking some ICX into the smart contract for a given period of time.

ICONbet

What is ICONbet?

ICONbet is the first DAO in the ICON Republic and has a focus on gaming. The ICONbet team will be giving out 80% ownership of the project to those participating in the game based on a player's betting volume relative to the total betting volume on a particular day. Additionally, revenue generated by the ICONbet platform will be shared with all TAP token holders. More details can be found in the TAP Tokens section.

The ICONbet team will also develop an SDK, upon the success of the initial platform, to allow 3rd party developers to easily contribute to the ICONbet platform. Large TAP holders will be incentivized to continue growing the platform, as revenues from all games/applications on the platform will be shared amongst TAP holders.

Initial Games

New games will be added as the ICONbet platform continues to grow. New games can be built by either the ICONbet team or a 3rd party partner developer team interested in leveraging the existing ICONbet platform.

Playing any game on the ICONbet platform contributes to your volume in the platform-wide Wager War. **10% of the Current Treasury Excess** is allocated to the Wager War. Each day

this sum is divided amongst those in the Top 10 Leaderboard (based on the amount of ICX wagerd) with the below payout structure:

- 1st: 25%
- 2nd: 20%
- 3rd: 15%
- 4th: 10%
- 5th: 10%
- 6th: 6%
- 7th: 6%
- 8th: 3%
- 9th: 3%
- 10th: 2%

DAOlette

DAOlette is a Roulette-style game. It has 21 numbers, with 10 black numbers, 10 red numbers, and 1 green bomb. Traditional Roulette bets such as Red, Black, Odd, Even, and specific number, have a higher payout factor than in conventional casino Roulette. Additionally, a slider allows users to customize the odds of winning, which is not available in traditional casinos.

The different types of bets, along with their odds and payouts, are detailed below:

Type of bet	Numbers	Odds	Payout Factor
Bet on Color	All red or black numbers	10/21	2
Bet on Even/Odd	All even or odd numbers	10/21	2
Bet on Number	Any single number	1/21	20
Bet on multiple Numbers	n numbers (chosen by user) from 1 to 20, $1 < n \leq 20$	$n/21$	$20.685/n$
Slider Bet, Low	1 to n	$n/21$	$20.685/n$
Slider Bet, High	n to 20	$(21 - n)/21$	$20.685/(21 - n)$

DAOdice

DAOdice is a game involving two ten-sided dice. One die has numbers 0 through 9, while the other die has numbers 0, 10, 20...90, allowing for players to roll any number between 0 and 99.

Players adjust the range on which they would like to bet, then the odds of winning and multiplier adjust accordingly.

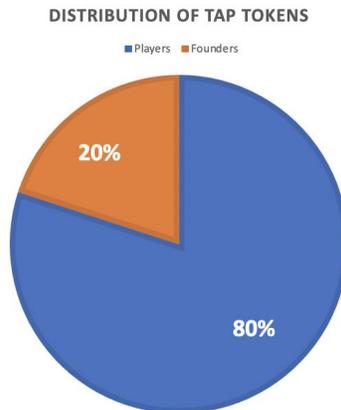
The different types of bets, along with their odds and payouts, are detailed below:

Type of bet	Numbers	Odds	Payout Factor
Range	Any range of n numbers chosen by the user	n/100	98.5/n
One ICON Symbol	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90	19/100	5
Two ICON Symbols	00	1/100	95
Matching Digits	00, 11, 22, 33, 44, 55, 66, 77, 88, 99	1/10	9.5

TAP Tokens & Token Economics

TAP tokens represent ownership of the ICONbet platform. There will be 625,000,000 total TAP minted, and the team will start with 125,000,000 TAP tokens. During the first 250 days of operation, 1 million TAP Tokens will be mined per day by users.

After 250 days, the daily mined amount will begin tapering down by 0.5% per day. For example, 995,000 TAP Tokens will be mined on day 251 (1,000,000 x 99.5%), 990,025 will be mined on day 252 (995,000 x 99.5%) and so on. The taper will stop at a daily mine of 25,000 TAP Tokens per day, eventually completely running out of TAP tokens after 3,224 days of mining.



TAP Distribution Formula

The formula for calculating an individual's daily distribution of TAP tokens is below:

Distribution to Individual Player = (Individual Player's Betting Volume / Total Betting Volume) x TAP tokens available for mining today

ICX Rewards Distribution Formulae

At the end of each day, any excess ICX held in the ICONbet treasury will be distributed to TAP holders and the ICONbet founding team. Given the Wager War allocation from the section above, the formulae for calculating an individual TAP holder's daily earnings are below:

My Rewards = (0.8 - Wager War) x Treasury Excess x My TAP / mined TAP

DAO Structure

The structure of ICONbet will gradually become a true DAO as TAP tokens are distributed to players. TAP holders will be entitled to the earnings of the ICONbet platform and are entitled to their fair share of the house treasury in the event of a liquidation.

A liquidation can occur if the majority (greater than 50%) of TAP token holders vote to discontinue ICONbet. Reasons for liquidation would primarily include a lack of betting volume on the platform. With low betting volume, it could be more economical to vote for a liquidation and receive the pro-rata portion of the 250,000 ICX stored in the house treasury.

ICONbet will start with only one game, and the founding team will continue to add games based on the success of the initial launch. Additionally, 3rd party developers will be encouraged to add new games to the platform, thus supporting the DAO structure of the ICONbet platform.

TAP tokens also have additional utility as voting weight. ICONbet holds votes, where TAP token holders have the opportunity to shape the future direction of ICONbet. Examples of such votes could include deciding which new games to add to the platform, changes or updates to existing games, or how to spend ICONbet's earnings.

Technical Details

Game Fairness

The stopping point of the Roulette wheel is determined using a pseudo random number that indicates angular displacement. That number is generated by taking a Secure Hash Algorithm

([sha3_256 hash](#)) of a seed, which is a concatenation of the string representation of the transaction hash, the block timestamp, and an optional user-provided 'lucky phrase'.

The source of unpredictability is the block timestamp, which is not determined until the block containing the transaction is assembled on one of the nodes. The block timestamp uses [Unix Epoch time](#) — an integer value of the number of microseconds elapsed since 00:00:00, January 1st, 1970. The block timestamp is concatenated with the transaction hash in order to ensure that all transactions have different random numbers.

The player can also choose to add a lucky phrase (or word, or an entirely random string) to the seed. The hash of these three concatenated elements produces a very large number. The last five digits of that number are then divided by 100,000 to obtain a value between 0 and 1, which indicates the angular displacement of the Roulette wheel.

See the following screenshot for the smart contract code:

```
def get_random(self, user_seed: str = '') -> float:
    """
    Generates a random # from tx hash, block timestamp and user provided
    seed. The block timestamp provides the source of unpredictability.

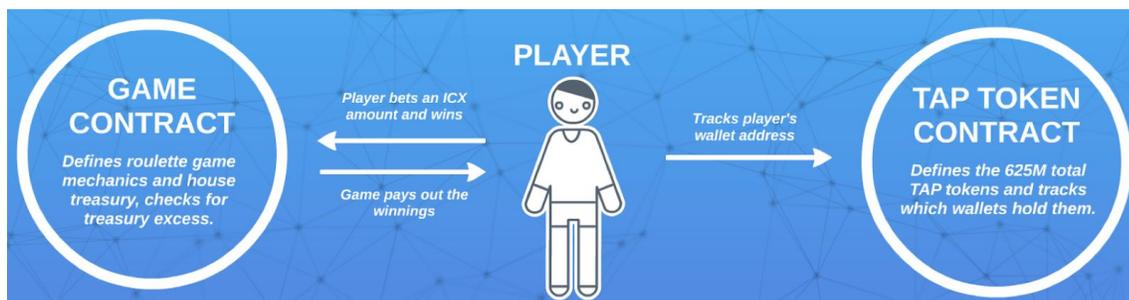
    :param user_seed: string, 'Lucky phrase' provided by user.

    :return: float, number from [x / 100000.0 for x in range(100000)]
    """
    seed = (str(bytes.hex(self.tx.hash)) + str(self.now()) + user_seed)
    spin = (int.from_bytes(sha3_256(seed.encode()), "big") % 100000)
    spin /= 100000.0
    return spin
```

Smart Contracts

There are five smart contracts that maintain the ICONbet platform.

1. The **TAP tokens contract** defines the total of 625,000,000 TAP tokens and tracks which wallets hold them.



- The **game contract** holds the house treasury. The house treasury holds 250,000 ICX. It accepts bets then pays out winnings or retains the placed bets. Regardless of whether the player wins or loses, this contract also sends a record of the bet amounts to the rewards distribution contract. The game contract also checks for an excess amount in the house treasury on a daily basis, and if there is an excess, the contract transfers it to the dividends distribution contract.



- The **rewards distribution contract** holds the 500,000,000 TAP tokens that will be distributed to the players. When this contract receives a signal from the game contract that a day has passed, it distributes TAP tokens to the wallets that have placed a bet during the previous day.



- The **dividends distribution contract** receives any excess from the house treasury once a day. Distribution is triggered by the rewards contract once it is finished distributing the 1M TAP tokens for the day.



- The **redistribution contract** was written as an update to redistribute dividends that go to TAP held on the rewards contract (3). It distributes this ICX according to a split chosen by TAP token holder vote, allocating a portion to Wager Wars starting at 10% of the total

dividends, as described above, with the rest going to TAP token holders to yield the ICX distribution formulae given above.

Team

The ICONbet team is globally distributed. Given the ever-changing and uncertain regulatory environment for blockchain-based games, tokens, and DAOs, the team has decided to remain anonymous. All smart contract code will be made open source to ensure the legitimacy and transparency of the project.