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### Provably Fair

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This cryptographic technique will be implemented by way of a cryptographic algorithm, using a hash function (SHA256) to carry out a series of encryptions and obtaining several hashes (an alphanumeric string: numbers + letters combined). One of these values is immediately provided by the user's browser. This value will not be known to AstorGame, nor will it appear on its servers.

The randomly generated numbers used to display the outcomes of games such as poker, roulette, craps, etc. are determined by a combination of factors, some from the server side and others from the client side. These two factors are called "seeds."

Players have access to the seed on the client side, but can only see the server side's hash. If, for example, poker is being played, the online casino's servers create new decks and shuffle them using a random number generator. Furthermore, the servers create the random strings. These two number strings are combined in order to create a unique encrypted string. The result of this process is known as the "secret."

Lastly — and this is very important — a hash is applied to the encrypted string ("secret") using an algorithm, SHA256. The result of this hashing is known as the "hash." This value will be shown to the player before the cards are dealt, demonstrating that the game is fair. For their part, players can, at any time, verify that the decks, the random strings, and the "secret" have not been manipulated by the online casino.

To obtain random numbers, we use a CSRNG (Cryptographically Secure Pseudorandom Number Generator)

## **Smart Contracts + Provably Fair**

It is possible that Provably Fair is already being used in some online casinos, but no online casino offers both of these applied technologies on the same platform. The use of Provably Fair and CSRNG, which generates numbers randomly, does not guarantee that a casino will deliver the prizes in a legal manner or that the funds corresponding to this pot will not disappear. It is here that smart contracts become more important, since they can be programmed so that the pot of a bet will be retained until it is known whether the user has won the bet. If the user wins, there is

no way for the owner of the casino to keep the pot or to delay payment, as happens in many gambling houses.

That's why we at AstorGame are the first to combine both platforms for the benefit of our clients.

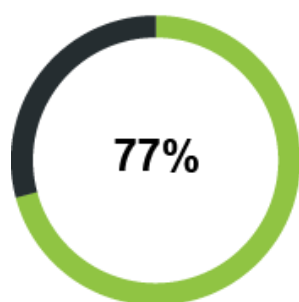
## Token Sale

We introduce ASTOR, an ERC20 compliant Ethereum based token. A total of 100,000,000 ASTOR tokens will be issued without any additional tokens. No token creation, minting or mining after the Token Sale is over. Unused and unsold tokens will be burned.

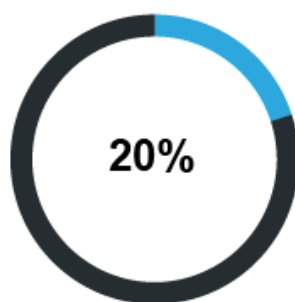
In addition to being used to conduct transactions such as the placing of some bets and the purchasing of some lottery tickets on the platforms that make up AstorGame will also enable its holders to collect dividends annually.

This information will be public, since the addresses from which clients place their bets and purchase their lottery or casino tokens and at which they receive their winnings will be published on the platform.

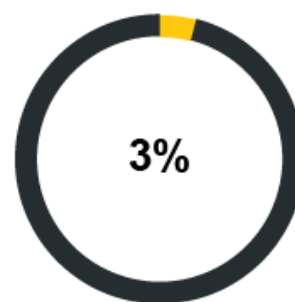
A total of 100,000,000 Astor coins shall exist, which shall be distributed in the following way:



Crowdsale

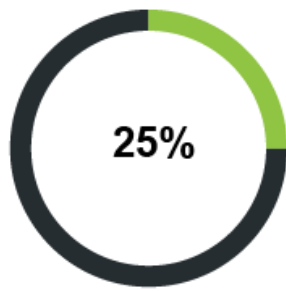


Development Team

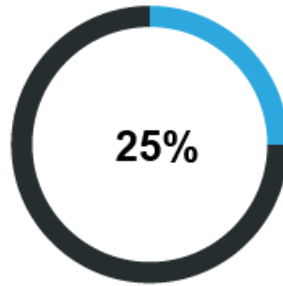


Bounty Campaign

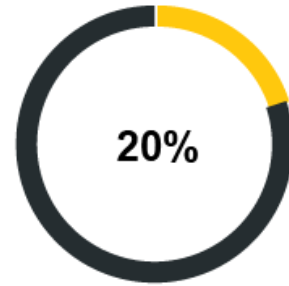
The amounts sold via crowdsale shall be distributed in the following way:



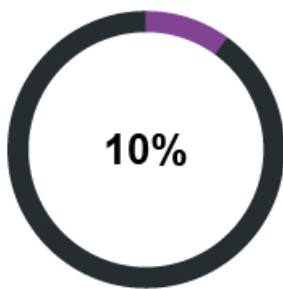
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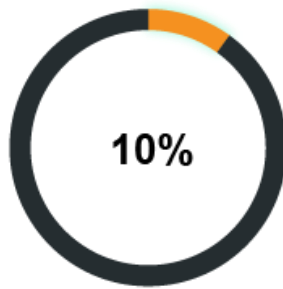
Marketing



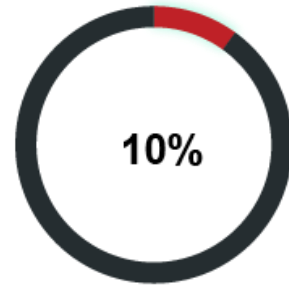
Liquid Assets



House Fund



Legal issues



Operations

## Customer Service and Protection

AstorGame provides customer service over chat programs, phone and email. Moreover, programmable responsible gaming controls will be implemented to control gambling addiction so that those who wish to program the platform to notify them of how long they have been playing or to reduce their gaming during certain hours will be able to do so.

## Introduction

This document describes the technology to be implemented at AstorGame and the economic position for which we strive. We believe it is necessary to offer enjoyment to our clients through quality products and services, thereby generating profits and thus benefiting our investors as well as our clients. For this reason, we choose to work with advanced technologies, such as blockchain and smart contracts.

Blockchain is the technology on which bitcoin and ethereum are based. It is revolutionizing long-established businesses and has generated a stampede of new projects, which are implementing new and improved solutions.

At AstorGame, we plan to utilize these new technologies to make quality improvements and generate added value for our clients, establishing ourselves, at some point in the future, as the leading company in the global online gaming market, as well as becoming a model of efficiency, transparency, and security as regards games, betting, and online fun.

We strive to be more than a token which investors trade and use to generate profits. We plan on being a company that is an established part of the market, and this is the way that we want our investors and want our clients to see us. We base our value as a company on increasing our capitalization and stability. Thus, the value of our assets will increase organically, and our token's holders, who will also benefit from the increase in value of the same, will also be able to enjoy the solid annual dividends that Astorgame will pay.

We plan to appeal not only to those who are familiar with cryptoterms but to the whole of the public throughout the world that barely understands — or does not understand — anything about bitcoin, blockchains, or altcoins. We will do this because that is where the market that is yet to be exploited is. Our platform will offer the services and advantages provided by a blockchain to the general public in a friendly manner with very little tech jargon.

## Goal

To become, within a period of 10 years, a leading online gaming company on the global market.

## Objectives

- To offer a variety of games in different categories to secure the inflow of a variety of client profiles;
- To develop to the fullest extent each of the gaming sectors in which AstorGame will participate;
- To promote AstorGame on a global level, setting ourselves apart through the use of new technologies, customer service, and the freshness of our games;
- To offer efficiency, speed, security and transparency to all of our clients;
- To expand the market, offering free courses for bettors on other shared platforms so that they might understand how the use of technologies like blockchain and smart contracts benefit them;
- Inasmuch as they may be required, to obtain the necessary licenses where these would be necessary.

## Online Gaming Platforms

- eSports games and tournaments
- eSports betting (including the capacity for “live betting”)
- Sports betting (including the capacity for “live betting”)
- Casino games
- Lotteries



## eSports

In eSports, or electronic sports, two or more opponents face each other in an online battle for victory. Currently, eSports are growing exponentially: it is a market that moves millions of dollars annually and can draw millions of spectators to a single match. It fills whole stadiums, and the spectacle and adrenaline it generates are comparable to that of a worldwide football tournament.

The eSports market is not just made up of games: an entire new and growing industry exists that is earning solid annual profits. If current trends hold, it will soon be comparable to football and baseball's big leagues. eSports players earn exorbitant sums of money and eSports clubs have trainers, analysts, and even sports psychologists.

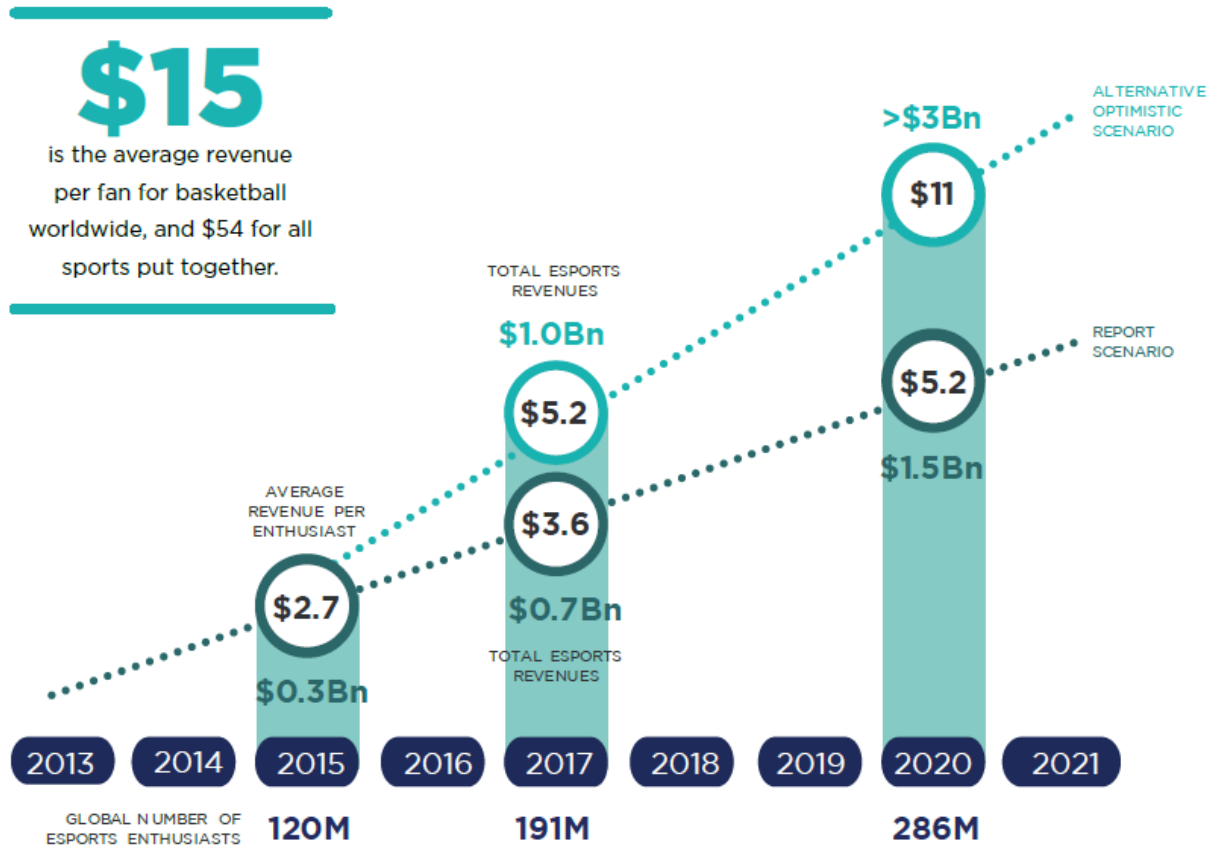
### **The Market of the Industry**

According to Newzoo, the leading consultancy for the games market, it is estimated that by the close of 2017 some \$696 million dollars will be earned. It is expected that by 2020, the market will grow to \$1.5 billion dollars, an annual growth rate of 41.3%.

These figures are drawn from advertising, media rights, investment by publishers, merchandise, spending on tickets to events and consumption at the same, and sponsorship. It also includes online viewing, which represents a very significant percentage of eSports' profits. Here, the Twitch platform is dominant, with 83% of the eSports audience in 2017, beating its closest rival, YouTube.

eSports and streaming will keep growing insofar as access to streaming becomes increasingly available in every country and the growth of advertising revenues, tournaments, subscriptions, digital tickets and online bets meets expectations.

## Global eSports Growth (Million of Dollars)



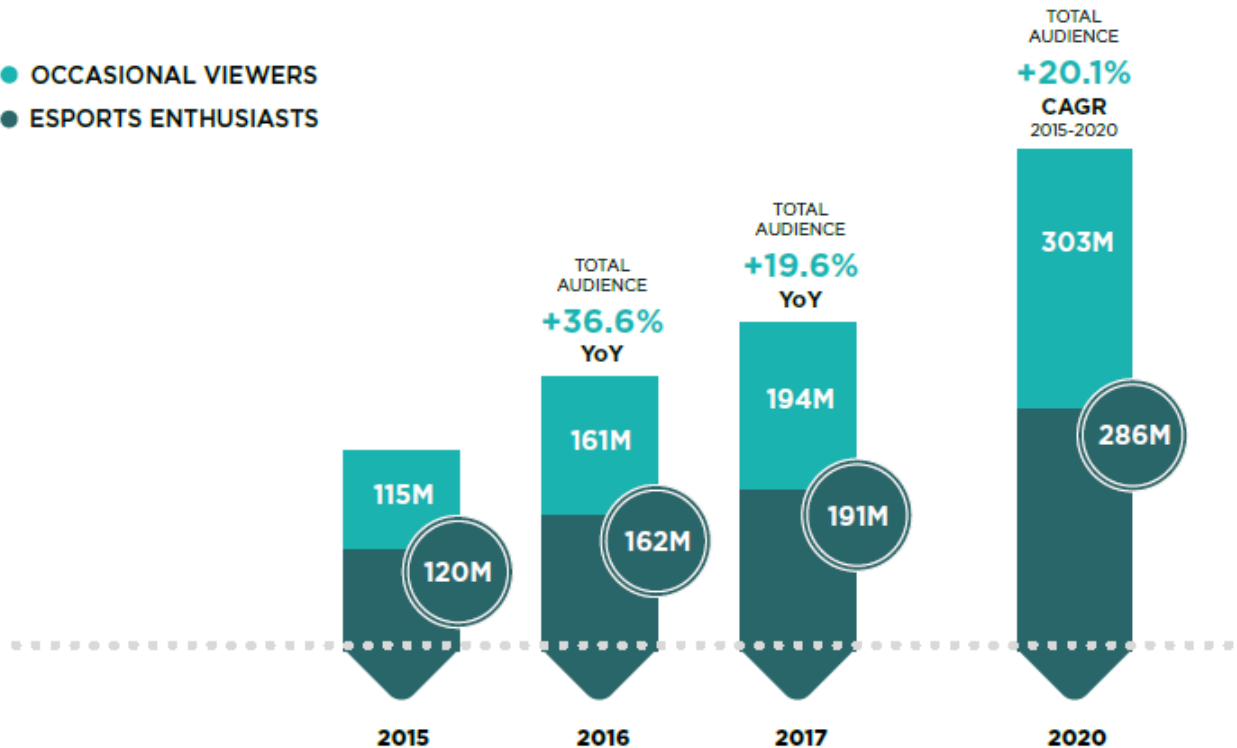
Amateur players represent a market segment with a lot of potential, as they are a large group that is willing to invest by acquiring videogames, making bets, and/or watching games via streaming video. This type of spectator represents a large percentage of the audience, which will grow to 191 million people in 2017. Occasional spectators amount to 194 million a year, making for a total of 385 million spectators that, in addition to attending events, consume products and place bets online.

## Growth of the eSports Audience

### ESPORTS AUDIENCE GROWTH

GLOBAL | 2016-2020

- OCCASIONAL VIEWERS
- ESPORTS ENTHUSIASTS



Here we can see the potential and the business opportunities that exist in the electronic sports sector.

AstorGame will initially make its earnings in two niches of this market: online bets and tournaments. Afterwards, we will be offering video streaming.

#### Top games by current player count

CURRENT PLAYERS	PEAK TODAY	GAME
877,844	877,844	PLAYERUNKNOWN'S BATTLEGROUNDS
838,519	842,919	Dota 2
536,432	560,877	Counter-Strike: Global Offensive
104,651	104,651	Grand Theft Auto V
85,359	85,675	H1Z1: King of the Kill
73,864	73,864	Tom Clancy's Rainbow Six Siege
65,857	66,960	Team Fortress 2
61,669	61,669	Football Manager 2017
58,227	67,610	Path of Exile
52,360	54,134	Warframe

## **Blockchain, Smart Contracts, and eSports**

A blockchain is a distributed data network that is made up of “blocks” which contains information, while smart contracts are computer programs written in virtual code. They are programmed to carry out a specific set of operations that are executed without either of the two parties having to intervene.

In a smart contract, if event “A” occurs, consequence “B” will be set in motion. It is not necessary for a third party, such as a notary, to certify or compel its execution. That’s why it’s ideal for automating payments, bets, videogames, property registers, automatic purchases, ballots, etc.

The AstorGame platform will enable players and bettors to carry out their transactions by way of a web-based application that lets users interact with smart contracts in a safe, transparent, automated and decentralized environment, thus being able to control almost all of the most important aspects of the game and of the bet.

As for tournaments, a smart contract is programmed to automate the competitor registration process. The contract will determine the high scores and the player or group that ends up winning will automatically be awarded the prize. Everything will be recorded and the entire transaction will be verifiable.

For those who bet on that tournament, a smart contract will, in turn, be created that will take the bets that are placed. Afterwards, the smart contract will verify these bets and the final scores of the tournament. After determining the winners of the game or tournament, the winning bettors will also be automatically determined and the sums that they are owed will be transferred to them.

If, for whatever reason, the platform were to crash, the smart contracts that administer the pots will return them directly to their respective owners. In order for this to occur, a second “wallet” address, which users will have from the moment that they register with the platform, will be solicited.

## Sports Betting and Online Casino

This is the second platform that makes up AstorGame.com, on which clients can place bets on a wide variety of sporting contests such as football, baseball, basketball, etc. We plan to provide a service that can compete on a global level, so it will be possible to place live bets. Furthermore, users will be able to enjoy various online casino games such as poker, blackjack, roulette, and slots.

Live bets allow for the placing of bets in a multitude of markets and the placing of an almost innumerable number of bets every second. Also, the web's response time will be high, and the events will be updated in real time. In any event, bets can be cashed out before the event finishes so that, by doing so, bettors can ensure their winnings or reduce their losses. This will be very similar to how trading works: those who conduct stock, bonds, or cryptocurrency trades may have an idea of how it is done.

Some gambling houses feature fees, waiting periods, and/or very low odds. At AstorGame, we plan to offer efficient service, good odds, and real and instantaneous payments.

By using smart contracts, we can offer this service to people throughout the world without needing a third party to confirm bets and make payments and prize transfers.

If a bettor places a bet on a football game or a boxing match, the platform will open a smart contract and store the bets there. It will automatically verify the outcome, and the pot that corresponds to the prize will be transferred to the winner. This will allow for increased agility, transparency, and security, as well as making it impossible for any third party to block funds or to retain the sums belonging to the bettors.

A good sports betting house offers its customers a good gaming experience, for example, good odds, a user-friendly interface, quick payment, and transaction security. This is one of the objectives that we strive for at AstorGame: to provide good customer service, to be trustworthy, quick, and safe.

## Market

The global online betting market is massive and estimated to be worth 50 billion dollars. Some companies, such as William Hill, earn one billion dollars annually in the sports betting market. The market is predicted to grow to 70 billion dollars by the year 2020.

### Global Growth of the Sports Betting Market by 2020

Bets on sporting events are an important part of the economy. It is a business that has experienced deregulation and worldwide expansion over the past few decades, becoming a multi-million dollar business. Currently, sports bets are a mass market product with a high level of public involvement.

### Market - International Sports Betting is a US\$48B Industry

Global industry projections indicate +9.5% annual growth rate; market expected to grow to US\$70B by 2020



#### Current State of US Sports Betting

##### June 2016

NHL awards expansion team to Las Vegas; team will begin play in 2018.

##### September 2016

Former NBA commissioner David Stern headlines Global Gaming Expo in Las Vegas to discuss regulated US sports betting.

##### November 2016

Nevada Gaming Control board reports record trailing 12-month handles and revenues.

##### Q1 2017

NFL owners approve the Raiders move to Las Vegas for 2019 season.

The growth of the internet and of mobile devices with quick access to odds has made betting, in general, much more accessible.

Satellite television channels and expanded coverage of live football games throughout the world has increased interest and access and with this has come the widespread use of “live” bets, through which one can bet money on the action as it happens. For example, one can bet on who will score the next point, with odds that fluctuate with the flow of the game.

Sports betting is the only form of gaming whose rates of participation have increased over the past decade (Gainsbury et al., 2014). Approximately 13% of Australian adults already bet on sport (Hing, Gainsbury et al., 2014). The amount spent tripled between over the 2005–2017 period, and continuous growth is predicted. (Deloitte, 2012; Joint Select Committee for Gambling Reform [JSCGR]).

This growth has been accompanied by the widespread advertising of live betting and televised sports, as well as transmission over much newer media such as the Internet, mobile platforms, social media, and other means of communication.

## **Streaming**

Streaming is a key way to attract new bettors. Accordingly, the use of advertising resources, live broadcasting, YouTube channels, Instagram videos will be among its key resources. These efforts must be combined with the ability to install a gaming application on a mobile device or a social network platform. The options are endless.

## Infogram Provably Fair



Thanks to Provably Fair, a technology that uses cryptography values, you can now play online betting games and prove that the game is fair or not. In fact, the technology, which is at the foundation of Bitcoin, gives the transparency of a physical casino to an online one. The games are random, just like brick-and-mortar gambling.

### THE BITCOIN TECHNOLOGY ANSWER



It eliminates the need to trust the casino, a third party or anyone else for that matter. This is because; there is no way to manipulate a wager that uses *hashing proof*.



The system uses a cryptographic algorithm using hash functions (*SHA-256*), which are almost impossible to decode and unbreakable for practical purposes.



*Randomness* of online games can be *verified* by players themselves in real time after each round played.



Using *Provably Fair* does not necessitate an online casino to accept bitcoins. It is only a technology that is borrowed from Bitcoin.

To understand how the concept of Provably Fair works, it is important to wrap your head around the term *hashing*.





# WHAT IS HASHING?



Hashing is a computer process that converts any form of data into a unique fixed string of characters, which are meaningless if read by humans.



Same data hashed, gets the same result. If the data is modified in any way or differs even slightly from the original one, the result changes too.

Gambling → apply hash → e440a8e6372f5bda794863672e4e59750d5c9dde44e192e6fb40b0b2279d6ce2  
Gambling3 → apply hash → 6d4b60cbbf53c312fc7a66861f3c6599a45ed7474b307876942d8be00064fc65  
Even if only one character is altered, the resulting string will be completely different.



You can hash different words, images, or any form of data.



SHA256 hash function is popular for online data security and encryption.

SHA256, invented by the NSA (US National Security Agency), is the most popular hashing technique; a secure and irreversible process.



# APPLICATION IN PROVABLY FAIR ONLINE BETTING GAMES

This same hashing can be used to cut the deck and confirm that it has not been tampered with, just like in a real casino. It verifies and self-audits wagers to ascertain they are fair. Let us use a game of online cards as an example:

**1. INITIAL-SHUFFLE** → The online casino shuffles the deck as normal. Casinos that do not use Provably Fair will hand you the deck at this point.



**2. SEEDS AND HASHES GENERATION**

The house generates a server-seed (random data) which is combined to the initial-shuffle\* and hashed. } → You get this hash before you start gambling. → You provide a random seed, automatically or manually generated in your browser (client side, not on the server) that the site cannot see or predict.

\*This combination is called Secret. (X) (Y)



Your seed changes the initial-shuffle to something unknown for you or the site. This is the online equivalent of cutting the deck to the dealers shuffle.

### 3. DEAL

The hand is dealt.



The initial deck is laid out.



### 4. VERIFICATION

→ The server-seed is revealed so you can verify it with the hash and check the house did, in fact, use the shuffled cards that you cut.

→ You can also check that the cards were then changed in accordance with the seed you provided.

If these are both the case, then you confirm that the results were actually **calculated fairly** and that you have just played a **provably fair hand!**



## HOW TO VERIFY MANUALLY

You can use the “Verify” button to prove that the spin matches the hash the site showed you before the game. Or you can check the game for fairness on another website, it is very easy to do. These are the steps:

1

Find a **third party hash calculator** like [online-encoder.com](http://online-encoder.com), [quickhash.com](http://quickhash.com) or [convertstring.com](http://convertstring.com).

2

Select **SHA-256** as your hashing algorithm.

3

Copy the Result+Secret field from the game, paste it into the input box of the third party calculator, and press “Generate” or “Encrypt”.

4

The resulting hash should exactly **match the hash** provided to the player before the game.

## FACTS AND TIPS ABOUT PROVABLY FAIR TECHNOLOGY



As the client-seed is only known by you, it is impossible for the house to distort the outcome.

**Hashes are irreversible**, there is no way to work backward and unearth your client-seed.

With the server hash in hand, you can always independently verify that the initial-shuffle + server-seed have **not been manipulated**.

Because **a hash is unique** to every set of data; as long as the hash is the same, you can be sure nothing has changed.

While it enables you prove that the game was fair, the **Probably Fair**, however, does not protect you from a casino that may choose not to honor a payment after a fair win.

## **Final observation**

This is a great opportunity to invest in a fast-growing industry. Online gaming is one of the best uses of cryptocurrencies.

Currently, online gaming, such as eSports, is a market worth over \$600 billion a year, as is the sports betting and casino gambling market. At the same time, and thanks to the benefits it offers bettors and operators, bets using cryptoassets will gradually take over this market. Investors in AstorGame will enjoy, along with the appreciation of our token, dividends from our company's capitalization for holding ASTOR.

## **The Future**

AstorGame has solid fundamentals to become the global market leader in eSports and online gaming. This is thanks to the company's decentralized model, its innovations, and the guarantees that it offers the clients. As for sports betting, we plan to include the majority of sports played at a global level without having to go through intermediaries or impose delays in the payment of prizes, no matter where our clients are located.

## **AstorGame and Charity**

The organizing of charity events from which 5% of the profits generated annually will be earmarked for donation to people in need is a part of our project. The beneficiaries will be selected from among the populations of extremely poor countries. The donations will be recorded in the blockchain, and will specify the personal information of those persons who have received help from the organization.