

MuGambo

The Blockchain Platform from the future
for Gaming and Metaverse.

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Crypto Terminology

- 1** **Airdrop** - A marketing strategy where free tokens are sent to users' wallets in an attempt to promote a particular virtual currency.
- 2** **Audit** - An official inspection made by the organization to check whether the system of functions aligns with the protocols.
- 3** **Bug Bounty** - Rewards offered to professionals who spot and expel cyber-vulnerabilities.
- 4** **Cryptography** - An encryption and decryption security technology involved in the transmission of electronic data.
- 5** **Decentralized** - A network that involves multiple nodal operations with independent control over data.
- 6** **DeFi** - Decentralized Finance
- 7** **ERC-20** - A standard allowing for the implementation of a standard API for fungible tokens within smart contracts of any EVM compatible blockchain
- 8** **Fiat currency** - A currency that's issued by the government and not backed by any commodity.
- 9** **KYC** - Know Your Customer process that involves an identity-check of customers before the onset of the process.

Crypto Terminology

10 Liquidity - Liquidity denotes the ease with which one token can be swapped for another in a market.

11 Phishing - A cybercrime where victims are targeted mostly by scammy emails, texts, and voice calls.

12 Tokens - Tokens are different from crypto coins. They are units of value released by a particular organization.

13 Transaction fee - The fee incurred by the exchange platform for every trade.

14 Utility token - Tokens that can be used in the future to avail various benefits or services from the issuing organization.

15 CEX - Centralized Exchange where users trade on a platform with a particular organization as the intermediary.

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01 Introduction to Blockchain Gaming and Metaverse

Blockchain technology has taken the world by storm of late. It is mainly a wake-up call to get rid of the existing problems in the fintech world and to replace the conventional paper money system with an innovative approach that can change the world for good.

However, blockchain technology is not all about money. Its enormous range of applications extends beyond the fintech world with blockchain-based gaming being one of the important operations. It is primarily because blockchain technology has the raw potential to change the landscape of global gaming, right from the way they are created to played.

Transparency is the key factor in blockchain-based games because it's a connected chain of blocks on a distributed internet ledger that remains transparent to every user on and off the system. Neither it can be changed nor deleted. Thus, every data recorded on the blockchain remains immutable forever.

The decentralized system ensures the games are not owned by any central team or third parties. Rather, they are owned by the gamers who have access to the in-game assets and collectibles (NFT) and other digital assets.

NFTs (non-fungible tokens) or digital tokens can be collected on gaming blockchain networks, either for free, by completing certain levels, or by making direct payments. NFTs are just similar to the cryptocurrencies we own like Bitcoin or Ethereum. They have their own store of value. Beyond wallets, the in-game collectibles can be transferred outside the corresponding blockchain ecosystem too.

Moving onto Metaverse, its source dates back to Neal Stephenson's 1992 dystopian cyberpunk novel Snow Crash. In it, Stephenson writes the following.

“

Like any place in Reality, the Street is subject to development. Developers can build their own small streets feeding off of the main one. They can build buildings, parks, signs, as well as things that do not exist in Reality, such as vast hovering overhead light shows, special neighborhoods where the rules of three-dimensional spacetime are ignored, and free-combat zones where people can go to kill each other.”

”



By onboarding people to such a virtual world, Metaverse helps us closely interact with the elements present and creates a brand new internet experience, something that has been only thought of and deemed impossible. Here is what Mark Zuckerberg claimed in a letter to his employees.

“

“We’ve gone from desktop to web to mobile; from text to photos to video. But this isn’t the end of the line,”



“The next platform will be even more immersive—an embodied internet where you’re in the experience, not just looking at it. We call this the metaverse, and it will touch every product we build.”

”

By mainly leveraging cloud infrastructure, Metaverse will blend all the essential social elements, from user’s data to multiple interactive applications, to offer a wholesome experience to the virtual avatars.

02 Potential Market Opportunity

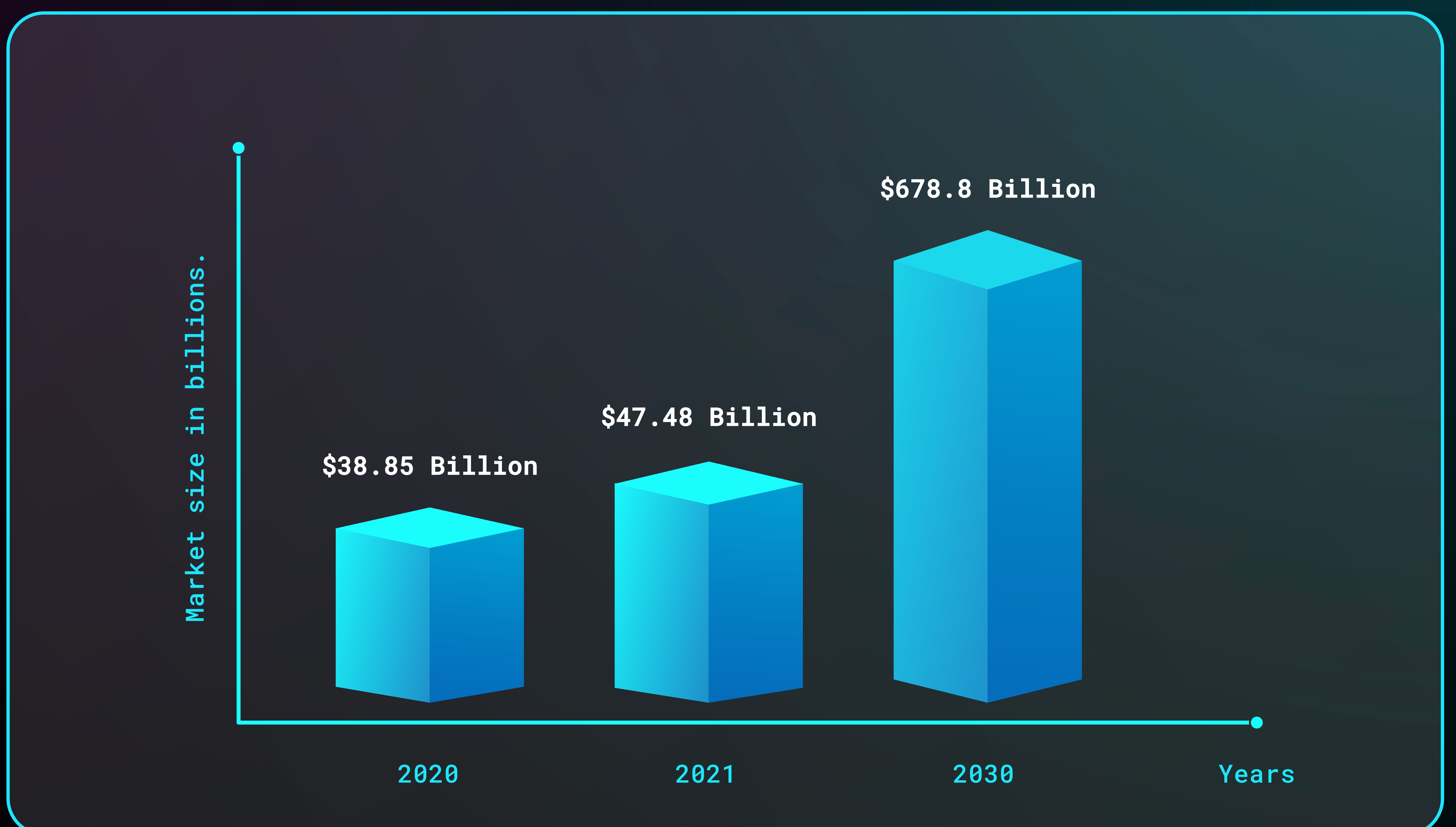
It is estimated that Asia-Pacific zones will contribute more to the utilization of blockchain-based games. As per a report from Yahoo Finance, China, Japan, South Korea, Taiwan, Malaysia, and Singapore will positively impact the gaming market industry in the upcoming years. Also, the gaming market is set to grow by USD 125.65 billion from 2020 to 2025 at a CAGR of 12% as reported by Technavio.



Since blockchain facilitates in-game trading of assets, transparent payment system, and a decentralized governing system, the initial traction to gain popularity wouldn't be much difficult. In fact, major gaming companies have already started incorporating blockchain technologies into their platforms. Microsoft has declared the usage of blockchain in its globally famous gaming console Xbox. The move was made to help artists, musicians, writers, and video game content creators gain increased visibility.



In 2021, the global metaverse market size reached 38.85 billion U.S. dollars. In 2022, it is believed to progress to 47.48 billion U.S. dollars, before peaking to 678.8 billion U.S. dollars by 2030. Deemed as the next version of the internet, Metaverse is the virtual junction that connects physical and digital elements of our life



03 Existing barriers in blockchain gaming

► Scalability

Existing blockchains require all nodes to verify and store a single block at a time, resulting in longer block creation times and block size constraints. As a result, performance will be restricted by the speed of each node, regardless of how many nodes are connected. The more transactions that need to be processed, the lower performance will be owing to network congestion.

► Fees

When trading on the blockchain, there are a variety of costs. The block reward and transaction confirmation fees paid to block miners are two of the most important fees. These fees reward consensus players while also protecting the network from DDOS and staking attacks.

MuGambo, on the other hand, argues that these fees are too high for a scalable and long-lasting blockchain with a healthy ecosystem of users and apps.

► History of data

Blockchain can only use information stored in blocks to verify previous transactions, and the information held inside existing blockchains can

only provide limited functionality. MuGambo feels that a function that controls historical information, as well as transactions within the block is important for blockchain technology to be fully used in the real world.

04 Welcome to MuGambo

With no central authority, blockchain technology has created a mechanism to establish consensus across all nodes. However, the technology has fundamental flaws like scalability and real-time transaction settlement.

Some blockchain implementations, such as Bitcoin or Ethereum, synchronize one block at a time, despite improved consensus algorithms.

This leads to long confirmation times, which is one of the most significant barriers to blockchain technology's widespread adoption across many businesses. Although systems like Cardano and EOS have begun to emerge, public Distributed Ledgers are still in their infancy.

A new model based on the PoA consensus algorithm was created to overcome these ongoing difficulties. Proof-of-Authority (PoA) is the latest addition to the blockchain consensus algorithm family. It offers high

performance and fault tolerance. In the Proof-of-Authority consensus algorithm, the right to create new blocks is rewarded to nodes that have rightfully proven their authority to do so. In order to earn this authority and the grand right to generate unique blocks, every node must pass a basic authentication process. PoA has proven to score higher than the conventional consensus algorithms such as Proof of Work (PoW) and Proof of Stake (PoS, which consumes high energy, computing power, and memory to maintain its functionality. Authorized network nodes generate blocks in a predetermined order at predetermined intervals. The speed with which transactions are validated is increased as a result of this. The 51 percent attack requires an attacker to gain control of 51 percent of network nodes in PoA consensus. This differs from the 51 percent attack, which requires an attacker to obtain 51 percent of network processing power for Proof-of-Work consensus types. It's considerably more difficult to get control of the nodes in a permissioned blockchain network than it is to gain processing power.

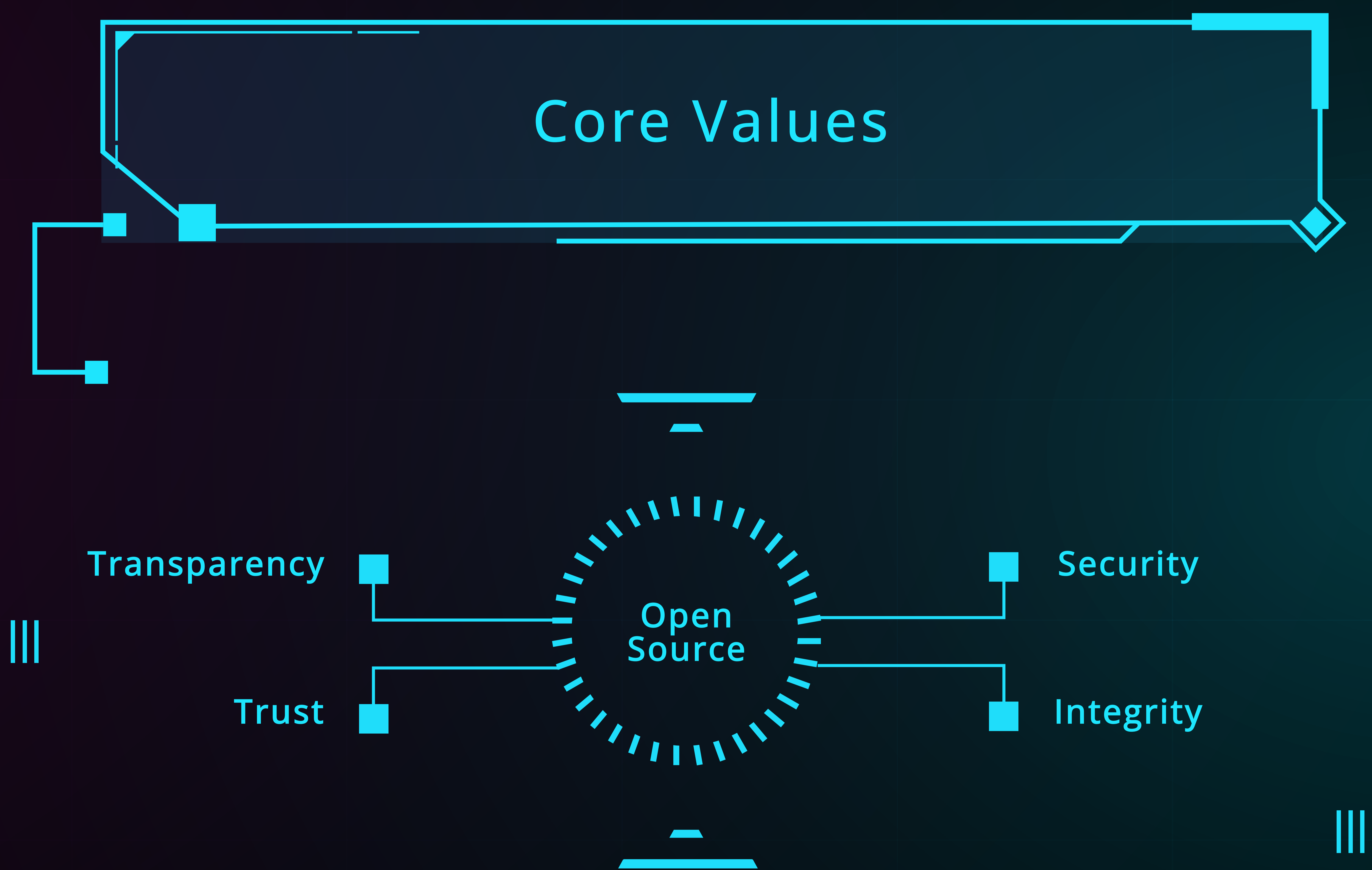
Mission

MuGambo's mission is to provide a practical blockchain for the Gaming industry with a solution for scalability and lower transaction cost and to offer interoperability with all transaction bodies around the world using fast DAG technology that can be deployed at scale in the real world, as well as to build a new high-reliability infrastructure that allows for real-time transactions and data sharing.

Vision

MuGambo aspires to be the home of all gaming applications and aims to get employed on a broad scale in a variety of industries, including telecommunications, finance, logistics, and electric car provision, among others. The MuGambo Foundation plans to develop the

MuGambo platform as well as a new Smart Contract-based ecosystem that will be available to all current and prospective MuGambo partner companies around the world. The MuGambo Foundation will pioneer the next generation of distributed ledger technology to enable consistent worldwide transactions with high accuracy and reliability.



The platform will be open-source, allowing the community to utilize and modify it, as well as provide numerous application support tools for creating decentralized applications (DApps).

05 MuGambo's solution

To solve the problems of existing blockchain solutions, MuGambo aims to develop a new implementation of PoA (Proof-of-Authority) and IBFT (Istanbul Byzantine Fault Tolerant) consensus algorithms. They are designed in such a way to establish consensus in a distributed system, building the single source of truth that makes blockchain so beneficial.

MuGambo's technology is intended to create potentially infinite scalability, and process thousands of transactions per second even with large numbers of nodes participating in the network.

Each block in IBFT requires numerous rounds of voting by the validators to reach a consensus, which is recorded as a collection of signatures on the block content. Byzantine Fault Tolerance refers to a network's ability to continue operating normally even if certain nodes are dishonest and try to propose bogus blocks or blocks that benefit some parties at the expense of others. The PBFT implementation (where IBFT is a part of) can endure f number of defective nodes in a network of $3f+1$ nodes.

The collecting of signatures from the proposer and voting validators ensures that IBFT blocks are highly resistant to tampering. It will be impossible to change the block content without having access to all of the

proposer and validator nodes' private signing keys. As a result, the immutability of the resulting blockchain is assured.

06 MuGambo - Technical overview

► PoA/IBFT on Hyperledger Besu

IBFT (Istanbul Byzantine Fault Tolerant) is a consensus mechanism that is considered as a reliable alternative to Proof of Work (PoW). IBFT, like other algorithms, ensures a uniform, consented ordering for blockchain transactions and offers extra benefits for businesses, such as resolution certainty.

IBFT is one of the many types of PoA and helps the system with the following benefits:

○ Instant block finality.

At any particular chain height, just one block is offered. As a result, the single-chain eliminates forking, uncle blocks, and the chance of a transaction being “undone” later on the chain.

△ Lesser block time

The effort required to build and validate blocks is dramatically decreased (especially when compared to PoW), resulting in a large increase in chain throughput.

✘ High fault tolerance and data integrity

To ensure the integrity of each block being offered, IBFT employs a group of validators. Block fabrication is extremely difficult because a supermajority (66 percent) of these validators must sign the block before it can be inserted into the chain. The group's 'leadership' rotates over time, guaranteeing that a defective node cannot exert long-term control over the chain.

☐ Flexible Operation

The group of validators can be changed over time to ensure that only full-trusted nodes are included.

The components of IBFT consensus mechanism are as follows:

☐ A PBFT inspired group consensus model.

✘ A method for adding and removing members from the validation group.

In MuGambo, Hyperledger Besu implements the IBFT 2.0 proof of authority (PoA) consensus protocol. Validators, or authorised accounts, validate transactions and blocks in IBFT 2.0 networks. The following block is created by the validators in turn. An ultra-majority (more than 66 percent) of validators must sign the block before it can be added to the chain.

Existing validators suggest and vote on validators to be added or removed. A majority vote (more than 50%) of validators is required to add or remove a validator.

To be Byzantine fault-tolerant, IBFT 2.0 requires four validators. The ability of a blockchain network to function successfully and reach consensus despite nodes failing or propagating inaccurate information to peers is known as byzantine fault tolerance.

Technical Overview:

To decide if a proposed block is eligible for addition to the chain, IBFT employs a pool of validating nodes (Validators) on the blockchain network.

The Proposer is chosen at random from among the validators and is responsible for building a block at the block interval and sharing it with the group. The block is added to the blockchain if it is deemed legitimate by a super-majority of the Validators.

The Validators may choose a new Proposer after the consensus round, who will be responsible for providing the candidate Block at the following block interval.

The consensus method is a state machine that ensures that all Validators append the same block to the chain at the same height.

The Proposer is changed if a block fails to insert, and the procedure is restarted.

IBFT precludes modifying the proposed block once the majority of validators have agreed to its insertion, a process known as 'Block Locking.' This ensures that only one block can be appended to the state machine. IBFT precludes modifying the proposed block once the majority of validators have agreed to its insertion, a process known as 'Block Locking.' This ensures that only one block can be appended to the state machine.

The IBFT consensus mechanism provides system stability provided the condition that less than 1/3 of the validating nodes are malfunctioning incorrectly i.e. to tolerate F faulty nodes the validation group must hold at least $3F + 1$ nodes.

Note: F = the number of faulty nodes tolerated by the system.

► Elliptic Curve Encryption Technology

MuGambo's technology has several intended features, one of which is safety. When sending data between signatures and nodes, MuGambo plans to use highly secure elliptic curve cryptosystem (ECC) technology.

Elliptic Curve Encryption has the advantage of ensuring high security with a short key size and allowing high-speed computations when signing.

ECC makes it easy to design a secure cryptosystem by applying the most efficient algorithms to solve discrete logarithm problems. It is much more efficient since it provides equal security with shorter key lengths than other cryptographic systems, equivalent to RSA 1024-bit keys and ECC 160-bit keys. In addition, elliptic curve operation is easy to implement in hardware or software. By using ECC, MuGambo intends to add support for hardware wallets as well as software wallets and enhance the security features for wallets. MuGambo is also interested in using the secp256k1 parameter of the ECC.

7 How MuGambo Transforms The Gaming Industry?

Blockchain

Blockchain is a technological breakthrough that permits the movement of value from one entity to another over a network and establishes digital trust between users. MuGambo's goal is to provide for the safe storage and transfer of capital without the use of a traditional public institution or middleman. MuGambo believes that for blockchain technology to be useful in real life, it must be transferable, irreversible, and have a low or zero transaction fee. Existing blockchain systems, on the other hand, have drawbacks, such as sluggish confirmation times and potentially hefty transaction costs.

Gaming security

With MuGambo, the probability of hackers breaking through the system is zero due to the presence of cryptographic encryption protocols as part of the decentralization technology. Thus, gamers' personal data and their in-game accomplishments, rewards, and collected NFTs remain secure.

Ownership of in-game assets

MuGambo platform's users and gamers will have complete access over their in-game collectibles at any cost because the network is basically decentralized without any third-party control. Gamers can send over the earned assets to their personal wallets too directly from the MuGambo ecosystem at ease.

Rewards and trading provisions

In-game purchasing facilities usually carry their own element of risk due to data storage and breaching disasters. However, in MuGambo, the encryption protocols ensure the payments are made only over blockchain networks via cryptocurrencies. So, every transaction remains transparent, and since blockchain wallets are involved, nobody stands a chance to break into the system.

Secure payment networks

As stated already, unlike traditional games, the rewards earned in various games will be in the form of NFTs (Non-fungible Tokens). Also, gamers will be provided with the provision to trade the digital assets with fellow gamers and make earnings out of it with the support of the MuGambo platform.

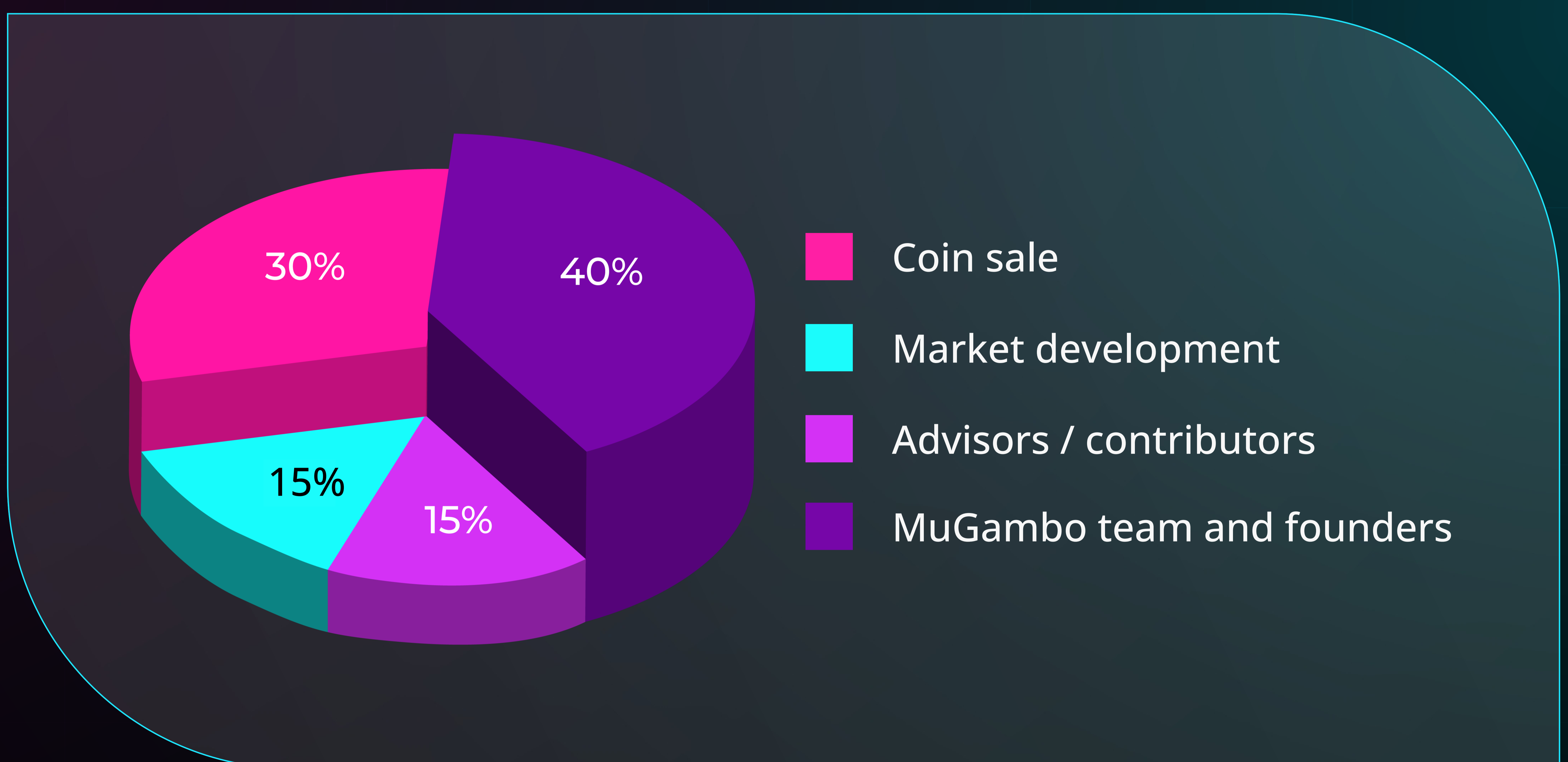
8

MuGambo coin distribution

There are 240 billion coins of which only 240 million will be issued for circulation in phase 1.

MuGambo platform adopts an inflationary model to expand the ecosystem. MuGambo anticipates that there will be initially a 5% annual inflation rate that decreases as more users join the network. 20% of the total inflation is intended to be used to reward nodes and the rest is intended to be used to provide incentives for MuGambo platform users such as near-zero transaction fees, and to reward users contributing to maintain a good flow of the ecosystem.

MuGambo Coin Distribution



The laws and regulations regarding coins are evolving. Coins will not be distributed to citizens, residents, or individuals domiciled in countries or jurisdictions that from time to time restrict the purchase of coins. These

the conditions and timing of any host coin issuance events, for example.

Coins for promoting the MuGambo ecosystem are intended to be used as incentives for new projects, marketing campaigns, recruitment of new employees, and growth for the next five years.

Coins for advisors and contributors and coins for the MuGambo team and founders will be used for team members who plan the development of projects as well as partners who are involved in the MuGambo project. These MuGambo coins are granted with 2-year disposal conditions by stage.

The Mugambo team & founder coin allocation has a 24-month vesting period, released monthly and Advisors/contributors coin allocation has 3 months lockup.

The laws and regulations regarding coins are evolving. Coins will not be distributed to citizens, residents, or individuals domiciled in countries or jurisdictions that from time to time restrict the purchase of coins. These may include the People's Republic of China, the United States of America, or other jurisdictions.

Similarly, the laws and regulations regarding network infrastructure operators are evolving. Licensing restrictions may apply from time to time for the operation of the Mugambo Foundation. Accordingly, these restrictions will be considered in determining

9 Traditional games vs MuGambo - Comparative use-case analysis

Factor	Traditional Games	MuGambo Network
1 Security	Prone to frequent cyber attacks and malware injections.	Encrypted by blockchain technology-cryptographic encryption protocols.
2 Rewards	Gaming accomplishments and rewards stay within the gaming ecosystem	In-game rewards are collected in the form of NFTs and can be sent to external apps.
3 Ownership	A central authority (sometimes, along with some third-parties) takes complete control over the entire gaming network.	Nobody holds ownership over any component of the game. It's decentralized and governed by the community.

4

Transactions

Gamers would have to seek the service of third-party payment vendors to buy assets.

In-built secure payment gateways facilitate safe transactions while purchasing in-game NFT collectibles.

5

Wallets

Storage of collected game assets is impossible in traditional centralized games.

Earned rewards can be transferred across to gamers' personal decentralized wallets easily.

6

Hacks

12 billion credential stuffings have been in a span of 17 months in centralized gaming systems.

MuGambo possesses an in-built counter-attacking system to prevent Sybil attack, Parasite Chain attack, and transaction flooding.

7

Transparency

Centralized authorities can make discrete changes to the gaming ecosystem at any time they want.

Since it's a decentralized system, changes are hardly made, and if so, they remain transparent to the common masses.

8

Speed

Loading speed and server issues have always been a talking point in the console and online gaming.

The speed with which you make in-game payments and access the game itself is phenomenal as it's uploaded on a blockchain network (known for speed).

9

Access

Though a large portion of games remains free, pay-to-play games hinder the participation of gamers with limited financial backgrounds.

No room for bias in MuGambo's blockchain gaming system. The platform remains open to use for gamers all across the world irrespective of their status.

10 Application of MuGambo's Capital

It is estimated that MuGambo's capital will be used in the following areas:



- Market development
- Operation expenses: 20%
- R&D / Development and application of ecosystem: 50%

Marketing Expenses



- Direct marketing
- PR marketing
- Content marketing
- Community growth events

Operation Expenses

- Sales/Operation
- Legal
- Additional expansion overseas
- Preparation for contingencies



R&D / Development and application of the ecosystem



1.1 MuGambo Team and partners

- ▶ Board members
- ▶ Advisory group
- ▶ Investors

1.2 Closure