HEMIS

Simple tools for popular games.

Non Technical White Paper

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What is Hemis?

Hemis is a new layer 1 blockchain platform that will provide platform agnostic tools for the creation of simple and fun games with elements of chance without the need to write complicated and expensive contracts. The goal is to provide tools to allow people to create and play games with a similar level of spontaneity and simplicity as rolling dice in real life and critically with a 'reliable randomness' that the vast majority of existing games cannot currently offer.

Blockchain Gaming

The blockchain gaming industry has experienced significant development and innovation in recent years, revolutionising the way games are created, played, and monetized. Blockchain technology, with its decentralised and transparent nature, has introduced new possibilities for ownership, authenticity, and value within the gaming ecosystem.

One of the notable advancements in blockchain gaming is the usage of non-fungible tokens (NFTs). NFTs have enabled the tokenization of in-game assets, giving players true ownership and the ability to trade and sell these assets on blockchain marketplaces. This has introduced a new level of value and rarity to virtual items, creating unique and collectible gaming experiences.

Blockchain technology has also expanded the potential of play-to-earn models, where players can earn real-world value by participating in blockchain-based games. By leveraging cryptocurrencies and blockchain-based economies, players can monetize their in-game achievements, skills, and assets, offering a new avenue for economic empowerment within gaming communities and offering the potential to 'de-silo' currency and even in-game items to be tradeable between and beyond individual platforms.

For gamers (and gamblers), there is often a high level of awareness of what fairness is and how 'the house' (whether a site host or game publisher) can cut corners or even manipulate the system and undermine or devalue the experience of playing online rather than in person. The integration of blockchain addresses long-standing challenges in the gaming industry, such as fraud, cheating and piracy. The immutable and decentralised nature of blockchain ensures the security and authenticity of in-game transactions, mitigating issues of fraud and enhancing the trust between players.

Beyond the games themselves, blockchain gaming has fostered greater community engagement and participation. Decentralised autonomous organisations (DAOs) have emerged, allowing players to have a say in the development and governance of games and their wider ecosystems. Players can contribute to decision-making processes, suggest improvements, and even earn rewards for their contributions, which both builds loyalty and provides insights for developers and publishers.

While the blockchain gaming industry is still in its early stages, it has shown promising growth and potential. The development of scalable and user-friendly blockchain solutions, such as layer-two protocols, aim to address the scalability and usability challenges, making blockchain gaming more accessible to mainstream audiences.

However, the initial hype and excitement around blockchain gaming eventually had to face certain elements of reality:

- Building complicated games on blockchain is extremely difficult. A huge number of projects have failed trying to do so.
- Many of the solutions to the difficulties of building complicated games on blockchain have only increased barriers to entry.
- Complicated blockchain based games only appeal to a small subset of gamers.
- Scalability issues make blockchain gaming expensive unless some level of centralization is accepted.

The Hemis Opportunity

The Hemis project is dedicated to providing the tools for people to create simple platform agnostic games involving dice, wagers or elements of chance (which we will refer to as 'dice games' for brevity) and to receive royalties when people play them. All without having to write a contract.

Dice-based games and games of chance have an enduring history that spans across cultures and continents, from worked stones to the knucklebones of sheep, going back many thousands of years. The global popularity of these games can be attributed to their simplicity, accessibility, and the element of chance they offer. Dice games provide a level playing field where anyone, regardless of age or skill, can participate and enjoy the thrill of rolling the dice.

Throughout history, dice games have been embedded in various cultural traditions and have served as sources of entertainment and social interaction. Games like Backgammon, Yahtzee, and Ludo have captivated players across generations and continue to be enjoyed in homes, clubs, and even competitive settings worldwide.

One of the key attractions of dice-based games is the random nature of the outcomes. The element of chance brings excitement and suspense, making each roll unpredictable and engaging. Players must rely on luck and strategize their moves accordingly, adding an element of uncertainty and anticipation to the gameplay. This universal appeal has contributed to the popularity of dice games across different cultures and age groups.

Dice-based gambling games have gained significant popularity in the global casino industry. Craps, Sic Bo, and other dice games provide thrilling experiences for gamblers, combining chance with strategic betting. The allure of potentially winning substantial rewards through the roll of the dice has made these games a staple in casinos worldwide.

While both dice-based games and video games have their dedicated fan bases, dice-based games often hold an advantage in terms of popularity due to their affordability and portability. The equipment required for dice games is relatively inexpensive and widely accessible, consisting primarily of a set of dice and perhaps a game board or score sheet. This low barrier to entry means that anyone can easily engage in dice-based games without the need for costly consoles, computers, or specialised gaming equipment. The portability of dice games allows them to be played virtually anywhere, from family gatherings and social events to outdoor picnics or while travelling. This versatility and convenience make dice games a popular choice among individuals seeking interactive entertainment without the need for expensive or cumbersome technology. Hemis aims to replicate this versatility and convenience as closely as possible.

True randomness is surprisingly difficult to achieve. Dice and gaming pieces have been refined over thousands of years from improvised objects into carefully balanced tools, tested to high standards for competitions and even commercial board games. Although it should seem an easy thing to replicate and even improve on digitally, this is actually seen as a weakness of digital dice and games of chance. Programming randomness is easy in principle but very hard in practice for machines designed to follow logical rules. Competition gamers, by and large, will not use digital dice when the result really matters. Although it might seem strange, 'reliable randomness' is something that is critical to many serious gamers and is one reason why professional gamblers will still prefer not to play online.

It is here that the proprietary algorithms developed by Hemis come into their own. The great strength of blockchain technology is in allowing for distributed ledgers of assets and transactions secured by deep encryption through the generation of secret keys. If these

strengths are combined with a second layer peer to peer network that can perform deterministic operations at a transaction level, the package of technology becomes even more potent.

Hemis aims to capture the fun and low barriers of entry that real world dice games enjoy and reproduce them in a simple digital toolkit, supported by a community of like minded game enthusiasts so that all you need to participate is a computer device and a passion for games of chance.

Project History

Back in 2014, Hemis co-founders Daniel and Fabian helped to roll out the first blockchain layer 2 service layer at DASH. For those unfamiliar with DASH, it was the first project to have a second tier node network that provided instant confirmation and private transactions using a quorum of 'masternodes'.

Masternodes are peer to peer collateralised nodes that are paid a percentage of the block reward in return for providing a service to the blockchain in return. Dash masternodes were a very early precursor to the nodes that are used to secure EOS and Ethereum today.

While helping to test and deploy the new layer 2 network at Dash, Daniel began to realise how the method of using deterministic quorum subsets of larger peer to peer networks could be applied to one of the oldest problems in computing and security, a subject of great academic research in itself: the generation of random numbers.

In the intervening years Daniel and Fabian explored ways in which quorums could be used for various applications and various prototypes were produced. However, in 2019, Daniel started to realise that harnessing provably fair and decentralised dice rolls without needing to learn or use Solidity could be a potent use of the technology and thereby significantly reduce barriers to entry for individuals and businesses.

In early 2020, at the start of the pandemic, Daniel convened a group of gaming enthusiasts, technologists, blockchain developers and software engineers to explore whether the technology could be useful in a real world setting. After weeks of discussion, the group concluded that the ability to build games with low technical barriers to entry and provably fair dice rolls and cheating protection could gain significant adoption in the gaming industry.

In 2021, the group was joined and led by veteran blockchain developer Takosha Churu who then proceeded to create the first live blockchain showcasing Hemis' 'probabilistic transactions'. Whilst the prototype was a resounding success, it was also a painful process in which we learned that we had painted ourselves into a corner with various aspects of functionality. In particular, we discovered that our use of miniscript meant that some technical knowledge would still be required to roll dice.

With those lessons learned, we began work on a new approach and platform from the ground up, this time functioning on probabilistic transactions at a consensus level. This is the Hemis that we are about to launch.

Unfortunately, Takosha became unwell in early 2022 and tragically lost his life in June 2023. Takosha leaves behind two young children and a loving family. He is hugely missed by us all. This project is dedicated to Takosha in his memory.

High Level Technical Summary & Tech Stack

The Basics.

Hemis is a layer 1 UTXO blockchain that uses Bitcoin as its core codebase. Hemis also uses elements of Dash, Pivx and Litecoin for basic functionality where those projects have provided good solutions. All other code is bespoke and will be open source.

Hemis will be transparently and fairly launched with a brief Proof of Work phase before switching to pure Proof of Stake. This is for reasons of avoiding Sybil and 51% attacks during the launch process. The aim of the launch process is to ensure that the blockchain and p2p network are truly decentralised and in the hands of the community.

The Second Layer

On top of the base Hemis blockchain, there will be a peer to peer network of Gamesmaster nodes. Gamesmaster nodes will be tasked with managing the DAO and with providing security for probabilistic transactions in return for a percentage of the block reward and transaction fees. A Gamesmaster node can be owned and operated by anyone, requiring only that a quantity of tokens are held as collateral in order to participate in game round processing.

In order to create game pieces to play with, they can be created as non fungible tokens.

Provably fair and transparent dice rolls without cheating will be handled at a consensus level, using a new mempool and transaction grouping method that is unique to Hemis.

Probabilistic transactions will be usable for fungible and non fungible tokens.

Game pieces (NFTs) will support attributes, allowing one token to record multiple properties. This will enable the introduction of functionality for deck building card games, RPG systems and numerous other applications in the future.

The Toolkit

The Hemis toolkit will initially only support 1:1 games of chance but will be upgraded to support n:1 games in later releases.

The toolkit will be accessible from an RPC API within the wallet, allowing game creators to provide games on any platform they choose. The only requirement would be to operate a

Hemis P2P node to connect your game to the blockchain.

Mining / Staking

Hemis will be launched with a short Proof of Work phase in order to securely initiate the chain. After that short period, the chain will switch to pure Proof of Stake so that anybody who owns Hemis tokens will be able to stake them to earn rewards for securing the blockchain.

Blockchain Fundamentals

Blockchain Type	UTXO
Blockchain Tier	Layer 1
Consensus Mechanism	PoW for first 120 blocks switching to PoS2
Grandfather Codebase	Bitcoin
Compute	Layer 2 Compute Nodes
Divisibility	8 Decimal Places
Block Time	60 Seconds
Emission	Linear (no halving)
Emission Schedule	10 years

Token Distribution / Tokenomics

The Hemis project has been privately funded by several investors. 200,000 tokens will be distributed to these investors at launch.

The largest amount of funding was provided by the co-founders, who will receive 600,000 tokens at launch.

A total of 800,000 tokens will be distributed to the public in order to ensure that the founders and investors do not have a majority control over the network and will be answerable to the DAO. These tokens will be distributed in the form of a public airdrop and also staking bonuses to reward community members who help us launch and secure the chain. The aim of this Airdrop will be to distribute tokens to as many people as possible so they can stake and protect the chain from 51% attacks during the launch. The end goal is to ensure that no one party has majority control over the blockchain.

A total of 10% of the first year coin supply will be set aside to form the dev fund for year 1 and paid to the team in twelve monthly instalments. This will be administered transparently by the project treasurer.

Distribution of all tokens will be fully transparent and trackable via the official block explorer.

Hemis has appointed a project treasurer who will be accountable to the community for distribution of payments to the dev team and founders.

	Tokens	% of Supply	
Investors	200,000.00	0.667%	
Founders	600,000.00	2.000%	
Airdrop	800,000.00	2.667%	
Dev Fund	292,000.00	0.973%	Paid in 12 instalments
To be minted/mined over 10 years	29,200,000.00	93.693%	

Launch Method

The original plan was for Hemis to be an old fashioned stealth launch with no premine. The only way to get tokens would be to mine or stake them. However, we abandoned this approach due to the following reasons:

- It is extremely difficult to publicly launch a new layer one blockchain without being vulnerable to 51% and Sybil attacks.
- A launch in this style runs the risk of not being noticed by the blockchain community as the industry is now accustomed to airdrops and token sales. Given that we want to build a community, this was not acceptable to us.

We next considered holding a token sale, with the main purpose to build a community. However, after significant planning we abandoned this approach due to the following reasons:

- Token sales are very expensive to operate both in terms of marketing but also legal fees. We did not feel comfortable spending such a large amount of money on something that would not add value to the core technology or functionality of the product.
- Exposure to legal risk. Adherence to the current securities regulations is onerous and risky for a community project. The argument that your token is a utility token is hard to make if you are selling them to people who expect a return on an investment.

We have decided on the following approach for launch.

1. The Hemis blockchain will be launched privately but fully transparently.. This gives us the opportunity to establish the blockchain and oversee the switch from Proof of Work to Proof of Stake without fear of malicious actors. The private phase will be observable by the community via a block explorer and all treasury addresses will be published for full transparency.
2. The Hemis GitHub will be open to the public, allowing people to download the wallet and sync the blockchain.
3. The airdrop will begin, allowing recipients to use their wallets to stake their coins, secure the network, and begin the process of assuming blockchain control from the core team.
4. When the airdrop is complete and over 50% of staking wallets are outside of team control, the launch process will be considered complete.

The details of the Hemis airdrop will be announced in January 2024.

Exchange Listings

The Hemis team will arrange a listing on an exchange. Trading will begin once the final tokens have been airdropped to the community and the blockchain is no longer under core team control.

The Hemis team has a listing agreement with an exchange. As is customary, we are not permitted to identify this exchange for reasons of a confidentiality agreement to ensure that the trading launch is as fair as possible.

The largest and highest profile exchanges list projects that are innovative and have a community that is active and engaged on social media and other channels. If you want Hemis to be launched on a particular exchange, be sure to let that exchange know about it!

Thank you for showing an interest in our project.