



Whitepaper
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Breaking New Ground

The HempCoin was among the first 30 currencies developed in 2014 and is a highly focused digital currency built on the source code of Bitcoin for the Agriculture/Farming Industry and Cannabis/Hemp Industry. Its use includes the Cannabis dispensaries and the entire Agriculture/Farming trade business. Upon inception, The HempCoin was the only cryptocurrency intended for use in Agriculture which is a trillion-dollar trade business worldwide. The vision was and remains for The HempCoin to help facilitate secure transactional relationships between farmers, distributors, & consumers.

In the 2nd Quarter of 2019, The HempCoin forged a new relationship with the Komodo Platform. THC recognizes KMD's tech as an innovative solution, immediately utilizing the code to build HempTRAC upon UXT0 technology.

The HempCoin code is 100% Proof of Stake (PoS) secured to the Bitcoin network by Delayed Proof of Work (dPoW).

Bitcoin-Level Security For All

Komodo's innovative delayed-Proof-of-Work (dPoW) security mechanism protects the entire ecosystem with the power of the Bitcoin Network. To compromise a protected chain, an attacker would need to overpower the native network, the KMD network, and the BTC network – all at the same time. Komodo allows blockchain projects to get BTC-level security at a fraction of the cost. Security is embedded for Komodo Chains but can also be extended to external blockchains. Komodo's dPoW security recycles Bitcoin's hash rate to protect the blockchain industry.

Limitless Scalability On Demand

Komodo gives each project the autonomy to control their own independent blockchain infrastructure and the freedom to scale out linearly at any point in time. Komodo's unique architecture gives you the ability to launch multiple chains, each with optional tokenization. Build without limitations and receive the flexibility to grow your own blockchain platform.

Komodo gives every project their own customized and dedicated blockchain for predictable performance. Add as many additional blockchains as you need and link them into clusters for linear scale-out. A unique burn protocol holds coin supply constant so multiple blockchains function as one.

Interoperability For All Blockchains

Through Komodo's multi-chain syncing technology, all projects are granted seamless cross-chain interoperability with other interlinked chains. Every blockchain is also connected to chains outside the ecosystem via atomic swaps and will become fully interoperable with future blockchain bridging support. Connect and collaborate with the wider blockchain industry. Komodo's industry-leading atomic swap tech supports 95% of all cryptocurrencies. An interlinked blockchain ecosystem enables cross-chain verifications and fungibility. External blockchains can be linked into the Komodo ecosystem through blockchain bridging.

Adaptability Through Modular Design

With a future-proof blockchain architecture, Komodo gives every project on the platform the opportunity to create flexible, modular solutions that can meet any use case. Komodo's modular platform technology allows maximum flexibility to build custom solutions. New features and tech updates are automatically pushed to Komodo's open source ecosystem.

The HempCoin is embracing trends in payment technology to provide a real-world banking solution for the legal cannabis industry and easy-to-implement alternative payment solutions for the agricultural and farming industries, industrial hemp industry, cannabis dispensaries, and hemp, cannabis, and tobacco-related retailers

Vision

HempPAY™ Mobile (HPM) is the The HempCoin's in-store mobile payment solution and multifunctional mobile wallet. For the conventional, mainstream consumer HPM is an easy-to-use in-store payment solution. For THC community, HPM is the HempCoin's mobile wallet – securely storing their public and private keys and interacting with the HempCoin blockchain to send, receive, and monitor their HempCoin balance. Experienced cryptocurrency users can use HPM to send and receive THC to and from exchanges while mainstream consumers will have the option to reload their THC balance using credit/debit card, Apple Pay, or Google Pay.

HPM will also serve as a directory, allowing users to find nearby retailers, dispensaries, and businesses that accept the HempCoin. An integrated advertising platform will allow merchants and businesses in the HempPAY™ network to advertise directly to local HPM users.

Point-of-Sale (POS) Systems Integrations

To become an in-store mobile payment solution, HempPay™ will need to be integrated with the merchant's POS system. The HempCoin's team of market researchers have identified the most popular POS systems in the industries we serve, and our developers are working to integrate HempPAY's™ merchant processing software. HPM is able to effectively compete with the speed of credit/debit card transactions. Transactions from HPM to HPM will be nearly instantaneous. A sender can easily scan a receiver's public address via QR Code, specify the amount of THC, and send payment instantly to the receiver. This is the easiest and most cost-effective solution for smaller merchants and merchants not using a modern POS system.

The HempCoin Brand Ambassador

The goal of the THC Ambassadors Program is to promote the mission, vision, and recent developments pertaining to the The HempCoin organization. The primary media for promotion include but are not limited to Facebook, Twitter, Instagram, Discord, Telegram, Bitcoin Talk, YouTube, Medium, and Steem.

Community members, partners, merchants and supporters are all welcome to join the THC Ambassadors Program. The HempCoin's Project will appoint certain people as moderators for one of our various social media channels or for other necessary roles.

THC promotion activities can include, for example:

- *Hosting Local HempCoin Meetups.* Establish a coalition of passionate supporters that encourage investing in THC and urge local merchants to adopt a HempPay™ payment option.
- *Video Production.* Produce videos announcing your support of The HempCoin and post them to your YouTube/Vimeo/Other channel.
- *Writing articles and blog posts.* Use your influence amongst your social media followers or website to promote The HempCoin adoption.
- *Creating artwork.* Are you an artist? Promote The HempCoin adoption through your artistic medium and we will use our social channels to display it to the world.
- *Word-of-mouth.* A face-to-face conversation is one of the best forms of marketing out there.

Being a THC Ambassador means you will be the first to hear about recent developments and advancements within The HempCoin organization. The Project Manager will convey information from the development team directly to the THC Ambassadors as it becomes available, in an effort to keep everyone on the same page.

PoS

Unlike the proof of work system, in which the user validates transactions and creates new blocks by performing a certain amount of computational work, a Proof of Stake system requires the user to show ownership of a certain number of cryptocurrency units.

The creator of a new block is chosen in a pseudo-random way, depending on the user's wealth, also defined as 'stake'. In the proof of stake system, blocks are said to be 'forged' or 'minted', not mined. Users who validate transactions and create new blocks in this system are referred to as forgers.

In order to validate transactions and create blocks, a forger must first put their own coins at 'stake'. Think of this as their holdings being held in an escrow account: if they validate a fraudulent transaction, they lose their holdings, as well as their rights to participate as a forger in the future. Once the forger puts their stake up, they can partake in the forging process, and because they have staked their own money, they are in theory now given as incentive to validate the right transactions.

The HempCoin will feature an on chain locking mechanism providing for rewards granted upon "Locking Up" of 50,000THC. Third party MasterNode providers are not *required*.

The HempCoin Structure

45% - 50K THC "Locked up" On Chain Reward

22% - Development reward to further the expansion and operation of THC

33% - SOLO Staking reward for users holding under 50k THC that have online wallets

BLOCK 1-500000 = 9THC

500001-1000000 = 8THC

1000001-1500000 = 7THC

2000001-2500000 = 6THC

2500001-3000000 = 5THC

3000001-3500000 = 4THC

3500001-4000000 = 3THC

518400 blocks per year

dPoW

Komodo's unique consensus mechanism provides the same level of security as the strongest PoW network, without attempting direct competition. Instead, Komodo's consensus mechanism uses the chosen PoW network as a storage space for "backups" of Komodo transactions. By this method, in the event of an attempted attack on Komodo's blockchain history, even a single surviving copy of the Komodo main chain will allow the entire ecosystem to overwrite and overrule any of the attacker's attempted changes.

In a key difference separating Komodo from regular PoW networks, the dPoW consensus mechanism does not recognize the Longest Chain Rule for any transactions that are older than the most recent "backup" of the Komodo blockchain. For conflicts that may arise which refer to transactions that are older than the most recent "backup," the consensus mechanism looks to the backups in the chosen PoW blockchain to find the accurate record. Furthermore, entrepreneurs who build independent blockchains (asset chains) in the Komodo ecosystem can likewise elect to have backups of their own records inserted into the Komodo main chain. In this manner, the records of the entrepreneur's chain are then included in the backup that is pushed into the protective hash rate of the main PoW blockchain (Bitcoin). Thus, entrepreneurs and developers in the Komodo ecosystem can have their independent blockchains protected by the chosen PoW network's hash rate. Therefore, to destroy even the smallest asset chain that is employing Komodo's dPoW security, the attacker would have to destroy:

- A) *ALL* existing copies of the assetchain;
 - B) *ALL* copies of the Komodo main chain;
 - C) The accompanying PoW security network into which the dPoW backups are inserted (Bitcoin). This endows the Komodo ecosystem with higher than Bitcoin level security, while avoiding the excessive financial and eco-unfriendly costs.
- In addition, the dPoW security provided by Komodo is not only greater than Bitcoin, but is also more flexible. The Komodo security services are performed by notary nodes, chosen through a stake-weighted vote. Notary nodes have the freedom to switch notarization to another PoW network. Reasons the notary nodes might elect to switch networks could include an event where worldwide miners' hashing power changes to another PoW network, or the cost of notarization to the current

PoW network becomes more than necessary. Through this flexibility, the Komodo ecosystem maintains both a superior level of security and a more flexible and adaptive nature than Bitcoin itself.

A Note About Komodo's Iguana Core Technology

All the following processes are supported by a deeper Komodo technology called Iguana Core. Readers of our entire white paper will note that Iguana Core is featured in each section. This is because Iguana Core is the heart of the underlying technology that enables the vast Komodo ecosystem to work together. The Iguana Core code itself is complex and to fully explain would require a separate white paper. In short, Iguana Core is a collection of code that serves many purposes. One function of Iguana Core is to empower the blockchain technologies Komodo either builds or adopts to act in coordination with each other. Often, Iguana Core can advance the initial capabilities beyond original expectations.

In the case of dPoW, the code that underlies notary-node functionality spawned from Iguana Core technology. Iguana Core is coded in the C programming language—the language of choice of Komodo's lead developer, JL777. The C language is designed to enable computers to process high volumes of information in a secure manner at high speed. This aligns with The HempCoin's directives to provide security and scalability to the community.

Security Provided by the Notary Nodes

Security is the foundational aspect of the Komodo ecosystem. Therefore, for the reader, first must be discussed the nature of the security the notary nodes provide. More detailed explanations on individual components will follow. The Komodo ecosystem uses a stake-weighted vote to elect parties who will run sixty-four separate “notary nodes.” These notary nodes perform the “backup” process via automation provided by the Iguana Core software that runs at the heart of our system. These backups are called “notarizations.” Each notarization performed by the notary nodes acts as a marker of the “true” history for the Komodo ecosystem, and this marker's accuracy is secured by the hash power of the chosen PoW network. The notary nodes work together in a decentralized and trustless manner both to create each notarization and to write it to the chosen PoW network (Bitcoin).

Frequency varies between two to six notarizations per hour, and the yearly cost to perform this service is ~180BTC. Funds for this service were raised as a part of the initial Komodo ICO, and our holdings allow us to continue this method for many years before we will be required to implement a business model to replenish our reserves.

The notarization process with our dPoW mechanism, each confirmation on the chosen PoW network is also a confirmation of the entire Komodo ecosystem's history. The only sacrifice that is made is the time it takes to push the Komodo ecosystem's records into the protection of the main hash rate. For this reason, the consensus mechanism is named, "delayed Proof of Work" (dPoW). The mechanism is designed to keep the advantages provided by the PoW system, circumvent the excessive financial and eco-unfriendly overhead costs, and avoid the security risks found in a PoS system. These measures are accomplished by several means. The most important measure is that all actions a notary node takes are publicly verifiable, and the Iguana Core software running on the users' machines verifies notary nodes' actions. The notary nodes themselves are not arbiters of "truth." Therefore, the only type of "false" behavior a malicious notary node can perform is to withhold notarization. There are sixty-four notary nodes. The minimum number of notary nodes required to maintain the Komodo ecosystem is thirteen. Thus, a malicious actor would have to compromise fifty-one notary nodes to shut down the Komodo ecosystem. Such an action would be uneconomic, as this would be destroying the access to the financial rewards a notary node receives for performing its duties. By this design, notary nodes have only one economically favorable position: to properly transfer the records of the Komodo ecosystem into a secure location and to increase Komodo's market share and value. For the average user, when performing a trade of goods and services where security is desired, the user simply needs to wait until the notarization process is complete. After the notary nodes are finished, the only way to break the security protecting their transaction history requires breaking the security of the chosen PoW network(Bitcoin). The Iguana Core code running in the main Komodo software automates the verification process. Thus, Komodo's dPoW consensus mechanism maintains the security innovated by Satoshi Nakamoto, and because it enables the Bitcoin hash rate to serve more independent blockchains than just the single Bitcoin blockchain, dPoW even *expands* on Nakamoto's original design.

Agricultural Data Tracking Service Utilizing UTXO Block-chain Technology

In order to comply with State and Federal Regulations, hemp & cannabis growers are required to provide specific information pertaining to their grows, their labeling, & their daily operations. It is important that this information is stored safely, securely, & processed in a timely fashion. The world of data is getting too large for it to be processed quickly & effectively solely via human methods, as the population grows the problem will expand. THC provides a universal solution, through decentralized networking & data storage it will resolve this problem. HempTRAC will use UTXO Smart Contracts (unspent transactions) to create an audit-able ledger for data storage. HempTRAC is easily transferable & independently verifiable. The Department of Agriculture (U.S.) or local regulating body may require growers to produce information for compliant operation (this may vary depending on the state/nation of the grower). Data that is verifiable without the use of third party control mitigates interference, incongruencies, & subversion.

Regulatory Information:

- The name of the Farm
- GPS Location of the farm
- Distributor the clones or seeds were sourced from
- Seed ID / Clone Genetics
- The Current THC Levels of active plants
- Destruction of plants that don't meet guidelines
- Date of Destruction / Amount Destroyed
- Harvest Date / Amount Yielded
- FDA Test Data for CBD / THC End Product

Growers able to modify:

- Grow site creation (Operator ID, Date, Location ID, Seed ID/ Name, Room Name)
- Mother plant creation (Operator ID, Date, Room ID, Plant Name)
- Clone of mother creation (Operator ID, Date, Room ID, Clone of Mother ID)
- Relocation of plant(s) to various rooms (Operator ID, Date, Room ID, Reason Comment)
- Harvesting of plant(s) resulting in various values (Operator ID, Date, Room ID, usable trim, unusable waste, sell-able product, kief, etc)((user defined values here))
- Laboratory data input (Operator ID, Location ID, Date, Lab ID, Organic levels, NPK ratio, etc.)
- Sale of product (Operator ID, Date, Location ID, amounts of product, the amount of cannabis/hemp harvested in pounds, the amount of cannabis/hemp sold to processor licensees in pounds, the amount of cannabis/hemp sold to researcher, dispensary, and processor licensees in pounds, the amount of drying or dried cannabis/hemp on hand, the amount of cannabis/hemp waste in pounds, If necessary, a detailed explanation of why any cannabis/hemp cannot be accounted for as having been sold, disposed of, or maintained in current inventory; & total dollar amount of all sales to processor, dispensary, & researcher licensees)
- Destruction of plant (Operator ID, Date, Location ID, reason: mites, mildew, etc.)
- Destruction of product (Operator ID, Date, Location ID, reason: mold, mildew, unsafe, etc.)

Client Benefits:

- Verification of strain, location of origin, trail of supply, lab test data, date product produced.

On Security:

It is imperative that the information is not manipulated, lost, stolen or delivered to the wrong hands. By providing a secure platform for this data, HempTRAC ensures that your personal information is safe & immutable on a distributed cryptographic ledger. Storing digital information in traditional ways may not be secure because there could be malicious attempts to steal your data. When data is in the wrong hands it can be sold to the highest bidder or your grow could be the target of criminal activity. The HempCoin offers privacy and security to our users and values it in the utmost importance. THC will create the most innovative platform to date, there is currently nothing else on the planet that is quite like HempTRAC. The System will utilize UXT0's built on the Komodo infrastructure, there is no "GAS" cost when using Komodo's framework, an issue that has plagued the Ethereum ecosystem from the very beginning. Using traditional "GAS" methods networks can be very expensive to maintain. A locking mechanism will be implemented on THC, by locking The HempCoin funds, you will not only take advantage of staking rewards, but give yourself the ability to leverage your farm's costs against your staking rewards.

HempTRAC Capabilities

- Create seed = (plant A)
- Clone seed = (plant A1, A2, Aa1, Aa2...)
- Create farming location(s) = (operation location(s)) via GPS
- Create separations in farm = different stages of growth (clone room, mother room, Veg, Flower, Fields...)

- Transport plant “event” to various separations in farm per guideline if necessary (Veg -> Flower, Flower -> Processing...)
- Add environmental data to farm history = (RH, Temp, electricity used...)
- Harvest plant “event” resulting in use-able product, unusable product, extracts...
- Laboratory data input = (organic levels, NPK ratio, THC, CBD...)
- Sale of product “event” = (amounts of product, the amount of cannabis/hemp harvested in pounds, the amount of cannabis/hemp sold to processor licensees in pounds, the amount of cannabis/hemp sold to researcher, dispensary, and processor licensees in pounds, the amount of drying or dried cannabis/hemp on hand, the amount of cannabis/hemp waste in pounds, If necessary, a detailed explanation of why any cannabis/hemp cannot be accounted for as having been sold, disposed of, or maintained in current inventory; and total dollar amount of all sales to processor, dispensary, and researcher licensees)
- Destroy Plant
- Destroy product = (seed, plant, shirt, flower, balm, cannabis, hemp, any product created...)
- Interact with the block-chain from a mobile device
- No publishing fees for data providers
- Through PoS, using HempTRAC & THC can leverage farm cost(s) = (if cost of farm is “x”, say rewards from staking or locking THC is “y”, using time as “t”, we can construct this equation where “ $x = yt$ ”)

References:

- <https://komodoplatform.com/technology/>
- The HempCoin (THC) Whitepaper circa 2016

These statements are not guarantees of future performance and undue reliance should not be placed on them. Such statements necessarily involve known and unknown risks and uncertainties, which may cause actual performance and financial results in future periods to differ materially from any projections of future performance or result expressed or implied by such statements.