POWERING THE KARMACONOMY

KARMASHIP TECHNICAL BRIEF

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I. FORWARD

The goal of this paper is to give a brief explanation into the technical aspects behind Karmaship and what ideally in the end we aim to achieve with this new technology. This is not an official white paper by any means nor is anything in here concrete or set in stone. This is merely conceptual in design and written for the developing Karmex blockchain and the Karmaship team as well as any private investors or potential team members seeking more information about the projects. As development matures, aspects of this document will change and grow per the needs of the development teams, with the end goal focused on creating the first successful dApp for the emerging Karmaship distributed ecosystem.

II. PREFACE

As an open-source project, Karmaship fully embraces the ethos of transparent and free technology for all. With this spirit in mind, there are some projects that must be acknowledged up front for their role in the evolution of the Karmaship platform. First and foremost, Karmaship thanks the entire NEM (New Economy Model) team for developing NEM and all the innovations that come with it. With its Proof Of Importance protocol and innovative use of Supernodes, NEM has served as an essential framework for the initial development of Karmaship [1].

Additionally, Karmaship would like to thank the Burst development team for their development of the Proof Of Capacity mining algorithm, which is an amazing advancement for improving decentralization in Proof Of Work [2]. This is the beauty of open source, all great ideas are shared and everyone wins. Karmaship hopes to take part in this great heritage with its own innovations, giving back to the open-source community and the world at large.

VISION

WHAT DOES KARMASHIP AIM TO BE?

The aim of this project is to create a new ecosystem for the economic development of an "open-source everything" society, where experiences are used to generate and back the exchange of value, not machines or centrally controlled agencies. The Karmaship team aims to create a truly decentralized, universal peer-to-peer (P2P) community-based blockchain protocol and ecosystem that incentivizes good community behavior through karmic Proof Of Experience. This ecosystem, called Karmaship will reside on the Karmex blockchain, a decentralized and open-source protocol designed specifically for this new experience-based fair economy - or Karmaconomy.

II. THE KARMACONOMY

AN EXPERIENCE-BASED ECONOMY

Ex·pe·ri·ence *(noun)* - practical knowledge, skill, or practice derived from direct observation of or participation in events or in a particular activity

In an effort to find a more fair, decentralized and sustainable economic model for humanity, Karmaship proposes an economy based around the intrinsic value of real-world experiences, where the interaction between individuals are transactions represented in the form of cryptocurrency and blockchain tokenization. In this new experience-based economy, positive interactions & experiences in the real-world have economic merit and are what drive the market vs the current capitalistic economy model which is controlled by supply and demand and access to capital.

Because the Karmaconomy relies on personal interaction and real-world engagement, it stimulates community activity and financial inclusion. It serves as a powerful foe to the ever-increasing technocracy that divides & dehumanizes mankind. With a truly decentralized blockchain design, cutting-edge mesh networking, DAO governance and the Proof Of Experience protocol, Karmaship aims to launch mankind into a new era of economic harmony and growth.

A SUSTAINABLE & SECURE DECENTRALIZED PLATFORM

What good is a new economy if it isn't secure or sustainable? To date, mankind has yet to develop an economic system that is fool proof or truly lasting. Historically, money has always been centralized and thus open to points of attack. This is why the Karmaconomy is being built on its own custom, open-source public blockchain.

In a truly decentralized system there is no single point of attack because anyone can be the owner of the agreed upon truth. The only way to maliciously breach this security net is through an overwhelming takeover of force. The best blockchains defend against this by being the most fairly distributed, as it ensures no centralization can occur and thus no overpowering of consensus. The more widely distributed, the stronger the defense. This is the most important aspect of network security because, if done right, it allows for the blockchain and thus the entire ecosystem to sustain itself in perpetuity.   Karmaship believes that the use of validating real-world experiences between humans to keep consensus, or what we call Proof Of Experience, will be the most secure consensus protocol to date.

KARMEX

In the Karmaconomy every user's positive activity and participation generates opportunity in the form of Karmex (KMX). Like Bitcoin, KMX can be used as digital cash, allowing for easy, fast and immutable transactions between individuals and groups. Later in this paper the initial distribution strategy for KMX will be explained in full detail. As of now, no ICO is planned.

Because the Karmaconomy will be using Karmex to transact on a daily basis, the coin must be easily accessible and fast with near zero fees while maintaining the right amount of inflation to spur commerce. With deflationary coins like Bitcoin and Litecoin, users are more apt to hold on to the coin as an long term investment. The goal of Karmaship is to motivate community activity and growth in the Karmaconomy which means the coin needs to be spent. This is why Karmex is both mined and 'Gathered' and has an infinite supply with a set annual inflation rate of 4%.

THE KARMASHIP PLATFORM

The Karmaship platform will work on top of the Karmex blockchain and be the central ecosystem for the new Karmaconomy. While the initial focus market will be the lifestyle event space, the core technology will be beneficial to any experiencial market with opportunity to

disrupt everything from live events of any kind to instructional classes, movie premiers, video gaming, shopping, amusement parks and so much more. Really, anything that can be deemed an 'experience' can be used with the Karmaship platform!

The vision for decentralized social engagement within Karmaship is powerful and expansive. The platform is being built with social interaction as one of the forefront priorities, implementing new technologies and a revolutionary new decentralized blockchain infrastructure to ensure privacy and security while at the same time allowing for the freedom to share and transact in an open and honest way. Most importantly though, Karmaship is being engineered to be highly entertaining and fun to use.

The driving factor of social media platforms like Facebook and Instagram is the endorphin rush of social engagement. Receiving likes and comments for posts as a sign of social acceptance has become a daily reality in the new social media-driven world we live in. While often times shallow and conceited, this system has been criticized by its own founders as a caustic addiction that can degrade its users and denigrate the culture. Karmaship aims to reach higher by using the core tenants of the Karmaconomy as its backbone for social engagement. By setting value to positive social engagement, Karmaship strives to bring the culture back into positive real world interactions. Social media is here to stay, lets take it higher!

THE SHARED EXPERIENCE ECOSYSTEM

Since the entire Karmaconomy is based on experiences, there needs to be a vehicle and defined rules in which these experiences are created and engaged with. This is where Karmaship comes into action.

First, within Karmaship, there are 2 designations of individuals: **Experiencers** and **Creators**.

EXPERIENCERS

Each Karmaship account is limited to 1 public address and its coinciding public profile Experiencer alias. Each Experiencer alias is unique and is used to perform all Experiencer functions within the blockchain ecosystem. The state associated with each account includes the following items:

- Account balance (in KMX)
- Number of gathered blocks
- Current number of Karma Experience (KEX)
- Current Open Experience tickets (multisig accounts)

- Current Node status (online or connected to online node)
- Friend Address Book
- PoCX Mining Attributes Time Of Inception and Block Generation Count
- PoCX Mining Plot Encryption Key

Experiencers can buy into or access free Experiences and receive Karma Experience or KEX through the new protocol, Proof Of Experience. There is no limit into how many Experiences a user can buy into however there are limits pertaining to how many times they can buy into one specific Experience. This is to protect the ecosystem against ticket fraud or event manipulation. Karmaship may implement some sort of referral system down the road where any Experiencer who refers a new user who ends up buying into an Experience gets a KMX percentage.

An Experiencer is defined by their public profile ID and alias so everyone is an Experiencer but not everyone is a Creator. Karmaship allows for only one address per wallet, thus promoting the use of a single profile within the ecosystem. While users can setup multiple wallets they are not incentivized to spread out their Karma Experience so if interested in benefiting in the Karmaconomy will be focused on building their singular wallet profile. This profile of course can be used across multiple wallets and devices. By maintaining this approach, an ecosystem based around trusted actors is more approachable, since identity will matter, even if it is an alias. All Experiencers can take part in consensus through Gathering and Delegated Gathering. (We will cover this more in Section III). Furthermore, the Karmaship community will incorporate a number of social mandates and operations that will further the Karmaconomy infrastructure and growth.

CREATORS

Creators are any user who has created an Experience on the blockchain. We will get into Experiences shortly but basically Creators are defined by the Experience issued to the community. The only gateway into creating an Experience is cost in KMX. Currently the cost to create a new Experience is 100 KMX but that is likely to change as we define and finalize the Karmaconomy KMX token supply. Creators cannot buy into their own Experience.

EXPERIENCE ASSETS

Within the Karmaconomy there are 2 main types of experiences. When an Experiencer decides to provide an Experience to the Karmaconomy, they must create an Experience Asset within the Karmaship dApp and give it a unique name. Depending on the type of Experience, there are

certain requirements in the form of KMX to publish. Once the Experience is launched, the Experiencer turns into a Creator.

TICKET EXPERIENCE

The first type of Experience in the Karmaconomy is a Ticket Experience. Within this, a Creator will set a defined date and time as well as max attendance capacity and initial price to attend the Experience. Based on price and max capacity, a sliding fee in KMX will be required to publish the Experience. By adding cost, this helps ensure each Experience is real since it has a cost to create. The larger the Experience, the higher the cost with a base price of 25 KMX for the smallest Ticket Experience. Creators can choose to create free Ticket Experiences as well at this base price however depending on the max capacity, this cost can go up.

When an Ticket Experience asset is created and launched by a Creator, a unique ticket asset is created that is either publicly or privately available on the Experience marketplace. This marketplace is accessible to all Experiencers where, based on the ticket value set forth by the Creator, they can buy into the Experience ticket asset with KMX. As Experiencers buy, the value of the new asset ticket can go up or down based on supply and demand (or the Creator can choose to keep the cost 'flat'.) This traditional free market system is essential to the growth opportunity for Creators but is also balanced by the fact that KMX is used as the purchasing currency. Since KMX is gained through Proof Of Experience and fair mining protocols open to all, it allows for even and equal access to these Experiences in a way not currently available in traditional fiat-based or other alternative capitalistic markets.

Any time an Experiencer buys into an Ticket Experience asset they receive the asset's associated ticket which has specific value based on the Experience market or price set by the Creator. This asset can be traded or sold by the Experiencer but since each Experiencer is limited to only one purchase into any single Experience they will only be able to trade or sell once. Besides avoiding various forms of system gaming, this policy aims to make scalping and other forms of ticket price manipulation more difficult to perform.

Examples of Ticket Experiences would be events like concerts, sporting events, business conferences & festivals where Experiencers would be purchasing into the event beforehand. This could also work for virtual experiences that cap out attendees like online classes or video game tournaments. We will discuss shortly how Ticket Experiences are validated for Proof of Experience.

OPEN EXPERIENCE

An Open Experience is created in the same way as a Ticket Experience except for the difference in max attendance, date and time declaration. With an Open Experience there is no

need to set the number of attendees and the event can be open for perpetuity. Also, no ticket is created. Instead a specific QR code is created where KMX can be sent to in exchange for access to the experience in real time. This can also be used for accepting donations.

Examples of Open Experiences are almost infinite as any person or place offering an experience can use this. Furthermore, Open Experiences can be used within Ticket Experiences, adding value to an event or interaction. An example of this would be at a county fair. To access the fair, one would need to purchase a ticket through a Ticket Experience but once the user is inside the fair, they can engage with other vendors, events & individuals providing Open Experiences. This allows for spur of the moment interaction in the Karmaconomy. In the next few sections we will discuss how these Open Experiences interface with Proof Of Experience.

VALIDATING TICKET EXPERIENCES WITH MULTISIG

The core engine running the Karmaconomy is the Proof Of Experience protocol. Because it is the mechanism that maintains consensus while simultaneously driving the economy forward, it is crucial that the Experiences it uses as proof are validated appropriately on the blockchain. Furthermore, with the 2 different types of Experiences as explained in the previous section, Karmaship sets a degree of importance of one over the other. With Ticket Experiences, there is a premeditated effort by both Creators and Experiencers to engage and interact, with real-world energy use and temporal commitment needed for initiation of the experience. Like Proof Of Work, this takes time and energy. In contrast, Open Experiences (like a street performer or online video) are more spur of the moment and often quite easy to access and engage with. Many take little to no time or energy. Because of this, Ticket Experiences are given more weight for the Karmaconomy and thus validated in a specific, secure way.

Karmaship uses multisignature blockchain technology to independently verify the entrance of any Experiencer into a Ticket Experience. This is done by making Creators multisig accounts. Whenever a new Experience Ticket is purchased it is also wrapped within a multisig transaction that is initially signed by the Creator or group of Creators. Upon this initial signature, a unique Ticket Experience QR code is created which will be scanned by a cosignatory multisig account holder called a 'Ticket Agent'.

KARMA TICKET AGENTS

Ticket Agents perform an important role in both securing and servicing the experience economy and are rewarded for processing each ticket. First, these cosignatory accounts serve as an additional layer of security against subversive Creators and Experiencers gaming the system.

To become a Ticket Agent a user must have a certain amount of experience and vested KMX. Secondly, they act as a ticket agent at events, creating a new decentralized position within the Karmaconomy. Creators must rely on the network of experienced users to process tickets, thus perpetuating the shared experience economy.

When a ticket QR code is scanned the ticket Agent signs off on the multisig transaction, completing the Proof of Experience and adding a specific quantity of tokens called Karma Experience or KEX to the user's account on the blockchain. This can only be signed off on and added to the blockchain if the original corresponding multisig transaction from the initial purchase is on the blockchain as well, thus making it 'multisig'. As a reward, the Karma Ticket Agent receives a small fraction of the KEX for being a part of the multisig validation experience.

KARMACONOMY
Ticket Experience

- Experiencers earn KEX & run consensus, earn rewards in KMX
- Creators create Experience Assets & earn KMX
- Ticket Agents validate ticket PoX and earn KEX
- Creator Supernodes process Delegated Gathering and earn KMX %
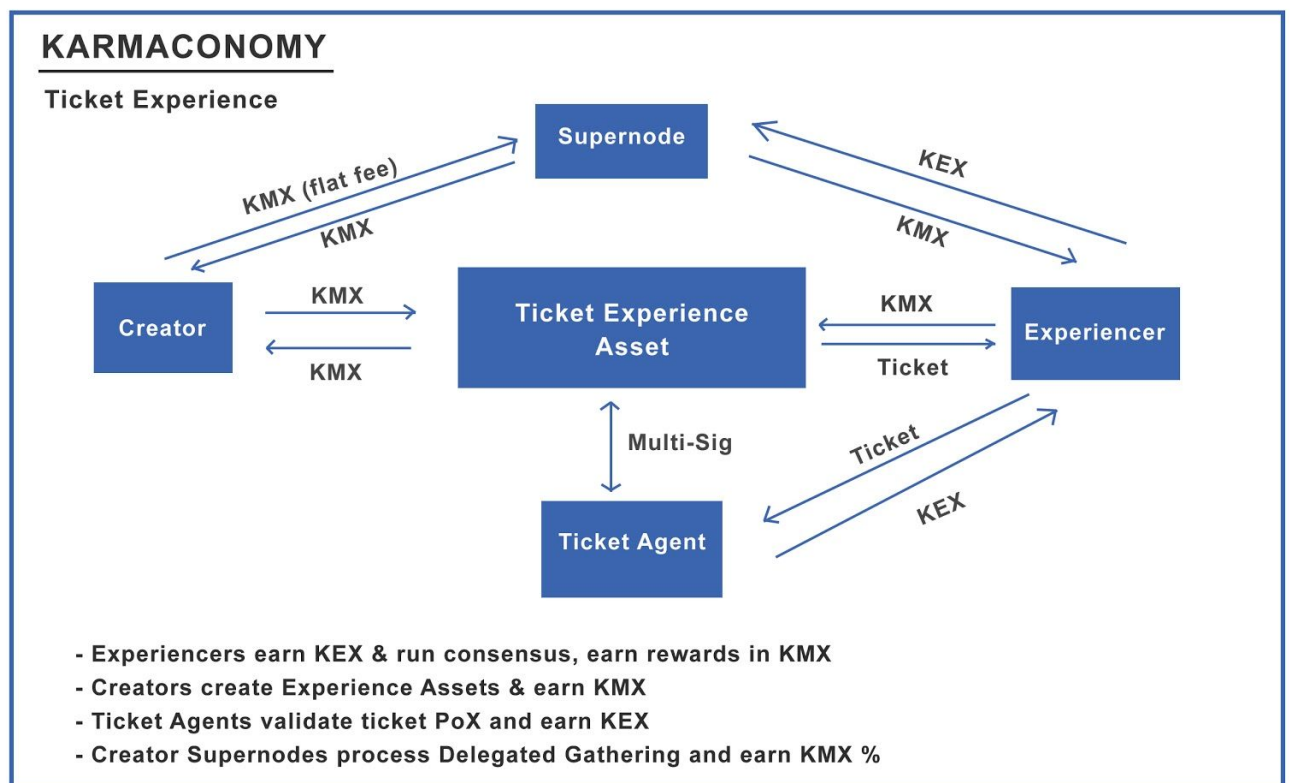
VALIDATING OPEN EXPERIENCES WITH KMX

Unlike Ticket Experiences that require pre-meditated purchase and specific access to an Experience, Open Experiences are much more loose in scope and thus carry less experience weight in the Karmaconomy. In order for Open Experiences to be effective, Creators and Experiencers need to be able to engage quickly and easily, thus validation must be simple and straightforward. When an Open Experience is published in the Karmaship dApp, a specific QR code is created where Experiencers can send payment in the form of KMX. Any time payment

is received, the experience is validated and a small amount of KEX is awarded to the Experiencer.

THE KEX TOKEN

The goal with the KEX token is to both qualify and quantify the value of the Experience in a way that will properly reward the correct amount of 'Experience points' for the Experiencer. In essence, KEX are the tokenized representation of the Experience itself. The more KEX an Experiencer receives the greater valuation of that particular Experience. KEX is purely used for the Proof Of Experience protocol and not to be sold or traded. Once processed as a transaction on the blockchain it is used to compute the most up to date PoX value of the Experiencer and then burned.

Depending on the type of validated Experience, a certain amount of KEX is delivered to the Experiencer's account on the blockchain. The amount of KEX earned is decided upon a number of factors related to the Experience. As stated above, Ticket Experiences hold more weight in the Karmaconomy so will receive the majority of KEX. Open Experiences will receive a simple amount of KEX based on the amount of KMX spent. This ratio is still being finalized but it will result in much less KEX than with a Ticket Experience.

TICKET EXPERIENCE KEX COMPUTATION

Ticket Experience KEX amount factors are not finalized yet but here are the current variables used in computing total amount:

1. Cost in KMX of Experience ticket
2. Quantity of Experiencers purchased within Experience asset
3. Cumulative Quality of Experiencers who have purchased into the Experience asset (calculated by their PoX score)
4. Percent of change in value of Experience ticket vs initial purchase, negative or positive.
5. Quantity of Previous Experiences created by same Creator

III. THE PROOF OF EXPERIENCE PROTOCOL

As stated earlier, the security of the Karmaconomy lies upon a truly sustainable, decentralized blockchain backbone. The central driving force behind Karmaship & the Karmaconomy is the Proof Of Experience (PoX) protocol. Without this, centralization would be required to achieve the rewards and consensus mechanisms needed to connect real-world experience validation to a virtual marketplace and shared economy on the blockchain.

What Proof Of Experience does is allow for the blockchain alone to validate and reward actors for engaging in an experience in person. Furthermore, Delegated Proof of Experience allows for scalability and a more robust network by allowing Supernodes to do the heavy lifting while Experiencers still provide the decentralized consensus based on their experience score.

PROOF OF WORK

By using the validation of an experience, PoX attempts to solve a lot of the issues established distributed consensus mechanisms currently face. Proof of Work, as created by Bitcoin founder Satoshi Nakamoto, was the first way in which the public ledger consensus could be maintained by relying on the computational processing power of machines, called 'miners' [3]. A brilliant design of its time, it held on to the concept that the energy expense needed to out-perform 51% of the network's miners would deter any type of attack. For the most part, as in the case of Bitcoin, this has worked but at a great expense. The mining cost has had its repercussions including environmental impact and centralization via mining consortiums who now hold most of the 'hash power' which determines consensus. Still, even with these issues, PoW continues to be a dominant and reliable form of consensus and has been tweaked and altered over the years to make it more fair and less energy dependent.

PROOF OF STAKE

Around 2013, blockchain 2.0 came about with the emergence of Proof Of Stake, a new protocol that factored in the quantity of currency 'staked' by full nodes to generate new blocks and maintain consensus [4]. The theory here was that those who hold a lot of coin have it in their best interest to maintain true consensus and keep the chain honest since they have the most at stake. Furthermore, it would typically require someone with over 51% ownership of the entire currency to fork the chain or double spend so as long as the economy is distributed it is safe [5]. However, like its PoW successor, PoS also has issues with centralization as it tends to reward the upper percent who own most of the coin and it has a number of security issues (like the

nothing at stake problem) that in some ways make it more risky than its predecessor, PoW. A lot of fabulous research has been done on this with many new variations on PoS coming out.

We highly recommend reading this paper on the Ethereum Github which covers all aspects of Proof Of Stake:

https://github.com/ethereum/wiki/wiki/Proof-of-Stake-FAQ#what-would-the-equivalent-of-a-51-attack-against-casper-look-like

PROOF OF IMPORTANCE

Proof of Importance (PoI), as developed and used by the NEM blockchain in 2015, was an evolution of PoS to factor in a more holistic picture of who the useful users on the network are for maintaining consensus [1]. Besides quantity of coin, PoI also factors in the amount of coin spent by the user and a 'trust score' as determined by a separate purpose-designed system to factor in how much weight a node has to harvest blocks. PoI is unique in that it rewards users that actually spend the coin. It also provides additional security with its trust factors and answers many of the issues that come with PoS's nothing at stake problem. We will be using aspects of PoI within the Proof Of Experience protocol to strengthen these very things.

THE KARMA-CONSENSUS: PROOF OF EXPERIENCE (PoX)

We believe that Proof Of Experience will solve many of the environmental, security and centralization issues of both PoW & PoS. Through a complex algorithm that factors in the user's current KEX quantity, node trust score and Proof Of Importance, PoX plays the biggest factor into how the Karmex blockchain maintains consensus.   Every time a user validates the Experience they accessed or purchased in the Experience market, they receive a matching amount of KEX. As mentioned above, the amount of KEX can vary depending on a number of factors regarding the size and weight of the specific experience. This is all computed within the algorithm and then applied to the Experiencers' profile blockchain address. As the amount of KEX increases, the greater the weight of the Experiencer on the chain, thus increasing their probability to both Gather and Mine KMX. In this way, PoX forms the basis for heuristic evaluation of the most experienced and qualified accounts in the Karmaconomy.

CUMULATIVE KEX AMOUNT - TEQ

Every time a new PoX mined block is Gathered, all current cumulative KEX amounts are added to the Total Experience Quantity or (TEQ) of the Experiencer account and then burned. TEQ is responsible for 60% of total PoX score.

TRUST SCORE

Karmaship will implement a P2P reputation system made popular by the NEM network which is similar to the EigenTrust++ algorithm [6]. Through this reputation system, the network can assign a trust value to each user. This will count as 20% of the overall PoX score calculation. This Trust score alone has faults because malicious nodes could collude and report low trust values for honest nodes and high trust values for dishonest nodes. However, thanks to PoX validation at Experiences, malicious nodes would be lacking any real KEX unless acting through an actual malicious actor at the Experience. Due to the nature of the Experience validation which requires physical presence or real-time activation, there is little incentive to expend the energy needed to game the validation through live human actors. However, in case of malicious actors working within the ecosystem, incentive or not, the trust score system acts as a secondary level of security

For more detailed info on NEM's Trust Score please see their technical brief here:
https://nem.io/NEM_techRef.pdf

PROOF OF IMPORTANCE

As mentioned above, aspects of PoI are used within PoX to both increase consensus fairness and overall network security while adding a component of transaction stimulus to the Karmaconomy. One of the main factors in PoI is the amount of coin spent by the user account. The benefit of this is that it rewards using the KMX currency for things besides buying into Experiences. Because Karmaship aims to be its own fully enclosed economy with KMX as its transactional currency, this is an important stimulus for the growth of the economy.

NEM requires 10,000 vested XEM to qualify for PoI. This is done to secure the economy from spam nodes while driving economic growth through purchase of its coin. Like most Proof Of Stake blockchain networks, the biggest criticism of this vested interest is that it maintains a degree of centralization by rewarding those with large caches of coin. Karmaship counters this with its KEX token which can only be gained through validated Experiences.

PoI will count as 20% of the overall PoX score.

CALCULATING FINAL EXPERIENCE SCORES

The Experience score is calculated as follows:

100% Score = 60% TEQ (cumulative amount of KEX) + 20% Trust Score + 20% PoI score

Calculated together, the cumulative Experience points, overall network trust score and evaluation of activity through spending KMX form the basis for total evaluation of the overall 'experience weight' of accounts in the Karmaconomy. The end goal here is to validate that real human actors are the ones deciding the consensus. This takes out a lot of the potential for automated hacks and attacks by bots and fake wallets. Also, since experience cannot be arbitrarily manipulated or gamed, experience scores are useful for more than just consensus. Because they all sum to unity, they represent a finite quantity that forms the overall trust factor for the community at large which is, in effect trustless in nature. This allows for anonymous actors to safely and securely interact and transact with each other without fear of spam or malicious bots as it is very difficult to create multiple pseudonymous identities.

CONSENSUS HARDENING WITH PoCX

Besides the standard PoX consensus mechanism built into the Karmex blockchain, Karmaship will also engage miners doing a form of PoW called PoCX to add more security, decentralization and interest into the Karmaconomy. Creating a hybrid of the evolved PoW protocol made popular by Burst called Proof Of Capacity (PoC) [2], Karmaship plans to implement one of the most fair and energy-efficient mining algorithms the world has yet to see. Using PoX & PoI as an added security feature, PoCX will allow for those users with experience and transactions to mine the most blocks and create new KMX for the growth of the economy. PoCX is so lightweight and energy efficient it can be done with something as simple as a Raspberry Pi.

PoCX is conceptually proof of capacity mining of the blockchain. By proving your wallet is in consensus with all trusted clusters (Supernodes) which serve the entire blockchain to help load balance the entire network. Requiring miners to hold the chain and be a node the network will be more robust. This will also help clusters defeat any warp time across the network due to latency as new clusters bond to a Julian Date that will measure ping vs code and sync as an atomic automation.

A plot will be created for a wallet and the wallet will encrypt the plot at the specified block of inception. There is no pool mining yet the encryption is like setting your wallet as reward recipient in Burst. The miner will always need to refer to this encryption on the chain which acts as an encryption zipper to open their plot and submit a timeline for their mining at any specific block in the future. If the miner can't hit the 10 minute timeline they won't be able to submit

Karma Time. This encryption also holds their starting point to show how long they have been mining, it will be used as a variable.

All miners will need to have downloaded the entire blockchain which will contain Nonces that equal 10 minutes or the network timeline consensus, then they can submit Karma Time which would be how long it would take them to find a block over 10 minutes. The miners submit in this 10 minute round and the best Karma Time on the network is taken at 10 minutes exactly. This also turns the blockchain into an Atomic clock and calendar for helping smart contracts execute.

A plot will have free Nonces that are available to be sent to the chain if the wallet should win a block. As the wallet finds a block it gives the Nonce and now is short one Nonce which will not allow a winning wallet to mine the next block since it can not hit the 10 minute timeline. Now the network can not be forked by an individual or team of miners.

As its Nonce is confirmed it will be allowed to make another Nonce only to sync to the next block and then submit again. This next submission will have a very high Karma Time since it had just found a block. This is another variable to be combined into the PoCX expression. All of these factors will be within a wallet address and not encrypted so that Masternodes could also do the math and confirm that this wallet was online submitting and held the best timeline compared to all other miners on the network at that specific time. Again a miner can only submit if they hold all of the Nonces that equal 10 minutes which are embedded in the blockchain.

Block rewards can follow any type of coinbase payment and could mimic Bitcoin to now give miners the "Experience" of Mining Bitcoin. Many people never had the chance to mine Bitcoin and now Karma may endear itself to people as a chance. Since they can get their miner synced before others and get in line. It will be compared to very high difficulty with millions of people mining simultaneously. There are only so many blocks to win per day, but as people may turn off their miners or internet outages, there will always be other variables introduced that may benefit those who keep their miners online constantly.

IV. KARMEX BLOCKS & BLOCKCHAIN

The central backbone to every cryptocurrency is a public ledger called the blockchain which links blocks together. Each Karmex block can hold up to 200 transactions and stacks on top of each other in an immutable way that is unforkable after every 10 minutes. Karmaship calls the first block in the chain the genesis experience block.

Each block consists of the following:

1. The block number
2. The block time stamp
3. The public key of the gatherer or miner
4. The signatures of the block data
5. The previous block hash
6. The current nonce for PoCX mining
7. The generation hash
8. The block height
9. The list of transactions

EXPERIENCE GATHERING REWARDS - KARMA STAKING

Experience Gathering acts as one of 2 main consensus mechanisms on the Karmex blockchain. Based on their PoX score, Experiencer nodes are rewarded for hosting the entire blockchain through gathering. The chosen account to gather all the current transactions into the next block gets the fees from those transactions. This incentivizes them to add as many transactions to the block as possible. They are also rewarded 1 KMX (not set in stone).

Any account with a PoX score greater than 0 is eligible to gather.   To check if an account is allowed to create a new block at a specific network time, the following variables are calculated:

h = H (generation hash of previous block, public key of account)
t = time in seconds since last block
e = 8999999999 x (experience score of account)
d = difficulty for new block

The target block time is 15 secs or 4 blocks per minute.

DELEGATED EXPERIENCE GATHERING & SUPERNODES

While any Experiencer running a full node on their device can take part in consensus and earn rewards via Gathering (more below in Experience Gathering) any user with an experience score can still take part in consensus through Delegated Experience Gathering. With this,

Supernodes are used as the 'always-on' supercharged node hosting the blockchain. Experiencers with at least 1000 KEX can delegate their experience to one of these nodes and use them to gather transactions. This allows for mobile users to still take part in consensus and earn rewards on a lite wallet.

The cost for Supernodes is currently 100,000 KMX and the hardware requirements are specific. Supernodes do not take part in consensus but are important for many reasons as they serve as the processing backbone for the network, allowing for regular users to enjoy all the benefits of the Karmaconomy without the hassle of hosting the blockchain. Supernodes must be running 24 hours a day at a specific base processing speed and earn percentage reward for each block created.

V. THE KARMASHIP NETWORK

The Karmaship network is a peer-to-peer trustless network of anonymous nodes that are validated and continually evaluated via the Proof Of Experience protocol. In order to strengthen network security and scalability, it employs a number of different specialized nodes to verify transactions, run consensus and perform other important tasks for the Karmaconomy. Each node type has different rewards settings and on-chain responsibilities.

EXPERIENCER NODES

Any KMX holder running a wallet with the full blockchain who has earned enough Experience Points to qualify as an Experiencer. Experiencer nodes compete to earn the most experience points (via Proof Of Experience) so they can Gather the most KMX. These nodes play a crucial role in decentralization and network stability, especially leading up to and after large events when a great majority is back home running their full Experiencer Node on their desktop.

Any other users who does not wish to host the blockchain on his system can still delegate his Experience to Gather with Delegated Gathering. By running the KarmaLite Wallet on their phone or computer they can connect to a local Experiencer Node or Event Supernode and get their place in line for Gathering rewards in KMX.

Experiencer Nodes also act as the central nervous system for the entire experience-based network. They are incentivized to attend experiences and transact KMX, propelling the Karmaconomy forward.

EVENT SUPERNODES

Karmex understands that certain event organizers would like to gain higher returns of KMX in exchange for their heavy investment into the ecosystem. In light of this, we will be creating the Event Supernode. This node will require a higher initial deposit and specific hardware to run, creating a robust backbone of support for the network, especially for when large scale events are in remote areas where Experiencer Nodes won't be as active. In exchange for this cost and service, Supernodes will act as central hubs for Delegated Gathering, where they will receive a set percentage of payouts from each new block created via Gathering. Event organizers can also choose to market and highlight these hardware nodes with artistic designs and make them a visual 'totem' for the Karmaconomy at their experiences.

In exchange for the ability to do Delegated Gathering, there will be a 60 day delay before the node can be broken. Furthermore, the creation of a supernode will result in a permanent burn of the coins used to establish the node. This means that after the purchase of the Supernode, it will take an extended amount of time to make back the initial deposit once the event is over. These two innovations will prevent the opportunistic dumping of high token volumes when price targets are reached. This feature will essentially limit Supernodes to those who believe in the project and are willing to support it with their continual service of network security.

KARMA TICKET AGENT SERVICENODES

Providing the important task of validating user experience, Karma Ticket Agents must run a simple app on their mobile device to act as a servicenode for the network. Their only task is to validate the multisig transaction and send to the blockchain for Proof of Experience. In doing this they receive rewards in the form of KEX and thus a lot of experience points for gathering or mining.

ATM SERVICENODES

Essentially static running nodes at events or places of business, these provide a number of systemic tasks including possible validation of Proof Of Experience (if no Karma Ticket Agent is avail) as well as increasing liquidity at events through atomic swaps of other major cryptocurrencies including Bitcoin, Litecoin and Ethereum. ATM Servicenodes receive small fees for providing their services.

THE KARMAMESH NETWORK

Karmaship believes that the future success of distributed networks will rely on the ability of the community to independently connect without the need of a ISP or telecommunications company providing the connection. Through mesh networking, we can achieve that thanks to low energy bluetooth technology [7]. The development of this network will play a massive role in the success of Karmaship in the long run as it will allow for more remote communities and events to utilize the Karmaconomy, even without typical internet connectivity.

Besides bringing the freedom of independent network functionality, KarmaMesh will strengthen the overall blockchain security for PoX. In a mesh network, we can verify physical presence due to the nature of the weak bluetooth signal and thus can use this data to further validate the experience of a user. Karmaship plans on updating the PoX algorithm to include the mesh networking data once the network has been fully tested and implemented.

VI. THE FUTURE OF KARMASHIP

Karmaship will act as the flagship product for the Karmex blockchain but its future really lies on the growth and stability of the community embracing it. As a fully open-source public blockchain utility, Karmex will be open to any developers interested in using the Proof Of Experience system for their own application needs. There will be a public git accessible to all and multiple avenues of support and communication including Discord and Telegram channels.

As the community and user base grows, Karmaship will look towards embracing additional new technologies to support the growth of the platform and the ecosystem at large including virtual and augmented reality, offline transaction processing, clean energy integration and so much more. The ability to take Proof Of Experience to more virtual and digital worlds is a goal as well as pushing cutting-edge clean energy technologies for the mining side.

VII. TEAM & PARTNERSHIPS

THE KARMASHIP TEAM

Organically developed over the last few years by a group of passionate artists and open-source advocates in search for a better economic system, the Karmaship team became a reality with the initial conceptualization of Proof Of Experience by Karmaship co-founders alfa warrior, T3QuilAMocKINGbird & Tron. From there a dev team of like-minded developers in the open-source community has been growing and working together to make this project a reality, with personal donations of time and money put in by all. The official Karmaship Discord and Telegram channels will be active soon, allowing the developer community to spread out and grow. When launched, a complete list of developers will be available on the Karmaship website.

PARTNERSHIPS

Karmaship has aligned with other like-minded projects to expand the Karmaconomy into other platforms and decentralized ecosystems as well as better Karmaship's own technological advancement. While these projects are all open-source and thus their code available to the Karmaship team, it is the people behind these projects that matter the most. Karmaship is happy to be partnered with these people!

QORA

QORA has a small, die hard community of devs that are some of the most talented blockchain technicians and thinkers out there. They are currently close to releasing an entirely new QORA chain and coin, with a hard fork planned for this summer. Gen 2 QORA will feature a seperate data chain layer with unique functionality allowing it to function as a decentralized data server for websites and other dApps using QORA's transactional main chain.

Karmaship is working with the QORA team to integrate this functionality into Karmaship so Experiencers and Creators can create their own dApps and websites on the Karmaship platform. This will also potentially allow for integrations of decentralized VR and AR, mesh networking and other hardware innovations such as wristband wallets and portable Supernode machines. QORA will also help with building the Karmaship DEX, allowing for atomic cross chain swaps of KMX with their coin and other major coins like Bitcoin and Litecoin.

OUTSIDE IN MOVEMENT, LLC

Outside In Movement is an artist collective and event production company that embraces alternative thinking in culture, science, health and society in general. Founded by Karmaship founders Tron and alfa warrior, it is the creative and artistic Yin to the technological Yang of Karmaship. Outside In is focused on developing a community of artists and creatives that can express themselves as a collective whole while still maintaining their individual identity. Much like the subculture of Burning Man and other hyper-conscious movements, Outside In embraces counterculture and artistic expression for the overall good of humanity and the planet.

With these intentions and direction in mind, blockchain technology and the integration of the Karmaconomy is a perfect fit for the Outside In Movement. This partnership is crucial for the launch of Karmaship as it provides the initial real-world platform for this new technology and economic system to be realized and used. Outside In Movement is fully committed to produce a number of events using the Karmaship platform including their upcoming Equinox Music and Technology Festival and the Outside In Experience which will be more geared towards blockchain advocacy and exploration.

VIII. FUNDING & LAUNCHING THE KARMACONOMY

In today's cryptocurrency market, there is an unfortunate negative stigma surrounding the launch of new technologies thanks to the ICO boom and its inherent flaws. While we support the philosophy behind the concept, we are also aware of the realities and corruptive nature of this fundraising process. In light of this and thanks to the nature of the Karmaconomy, Karmaship is taking a different route to fund and launch the new economy.

Initial Private Funding

As a testament to the developers' belief in Karmaship, they are funding the initial project scope themselves. In exchange for this, each founder will receive coin during the Genesis Event for a Supernode. Because coin is burned when buying a Supernode, the founders' initial investment returns are going directly back into the economy. Furthermore, as an added assurance, all employee coin will have a vesting period of 36 months with a maximum withdrawal of 10% per quarter.

The Karmaship DEX And ATMs

Karmaship plans to build its own DEX (decentralized exchange) directly into its dApp, allowing users to freely exchange between major cryptocurrencies like Bitcoin and Ethereum for KMX. By keeping the coin out of the hands of day traders and bots, the Karmaship team hopes to create a more stable coin for daily transactions. Furthermore, ATMs will be made available at major Karmaship experiences, allowing for fiat to KMX exchange. Karmaship is also open to work with payment partners for facilitating fiat gateways inside the DEX.

The Genesis Event - Launching The Karmaconomy

To launch the initial genesis block for the Karmaconomy, the Karmaship team along with Outside In Movement will host a "Genesis Event" where a certain number of KMX will be minted and airdropped to attendees of the event. The remaining KMX will be reserved for future experience airdrops. This VIP event will be for all Karmaship team members, community leaders, cultural experience producers, artists, influencers, creatives and fans of the project. This will be an evenly distributed free airdrop to every attendee who validates their attendance of the event on Karmaship. This genesis event will allow for the initial economy to take off in the hands of those individuals who care about its growth as well as allow for the initial community to expand and grow as Karmaship is developed in full. The goal here is to foster an organic growth model for a healthy distribution of the economy

The current plan is to have a starter chain based off a fork of NEM created to support the economy with very minimal functionality within the "Karmalite" wallet. Essentially, Experiencers of the Genesis Event will receive an amount of coin they can choose to vest or spend. If they vest the coin they will be able to take part in delegated Experience Gathering or run their own Experiencer node and gather coin themselves. This will allow for the network to distribute out in an organic way while the development team has time to create the Proof Of Experience protocol and full Karmaship platform. (A full roadmap for the launch of the project is listed below.)

After this initial private Genesis Event, Karmaship will host 3 more public airdrop events culminating in a large public crowdfunding event hosted by Karmaship and Outside In Movement. This large event will most likely be a 2-3 day music and technology festival and will be the major release of the Karmaship platform.

IX. ROADMAP

2018 Q3

- Project Planning
- Core developer team finalized / consultants added
- Branding finalized and teaser Karmaship website launched
- Community Engagement in new Discord and Telegram channels
- NEM fork, starter chain development and testnet
- Closed Alpha test of Desktop KarmaLite wallet

2018 Q4

- KarmaLite Desktop beta release
- Closed alpha test of KarmaLite Android wallet
- Beta release of KarmaLite wallet
- Private Genesis Event & Airdrop of minted coin / Supernode creation
- Exchange listing and trading
- Community Development
    - Community developer outreach
    - Public Git Release
    - Community & industry conferences
- Official Karmaship website launch
- Public Airdrop Event

2019 Q1 & Q2

- Official White Paper release
- Karmaconomy.org website launched
- iOS KarmaLite wallet alpha testing
- Karmex blockchain testnet
- Security auditing / testing
- Karmaship ATM testing
- 2 more Public Airdrop Events

- iOS KarmaLite wallet beta release
- Karmaship desktop version closed alpha testing

2019 Q3 & Q4

- Karmaship desktop beta release
- Closed Android & iOS Karmaship alpha testing
- Karmaship Android beta release
- Hard fork to new KMX chain / experience points transfer
- Supernode hardware release
- ATM release
- Community Partnerships / Bounty Programs
    - Artist creations for Supernode hardware decoration
    - Branding / merchandising
    - Event Producers
    - Artist and Entertainer Sponsorships
- Large event for official platform launch
- Karmaconomy Foundation first election

2020 Q1 - Q4

- White Paper 2.0 Release
- DEX development and release
- Mesh Networking integration and deployment
- Virtual Reality integration and deployment
- Mobile wristband wallet technology development
- Platform tweaking
- DAO governance development through Karmaconomy.org

X. CASE STUDY

The following is an example case study of how the Karmaconomy would work in the real-world.

Equinox Music And Technology Festival

This event is a three to four thousand person weekend-long camping music and technology festival where attendees purchase entrance using the Karmaship platform. The event organizers were lucky enough to be a part of the initial Karmaship Genesis Event airdrops so have enough coin to pay for the creation of their Experience within the platform and are marketing the event as the first large-scale Karmaconomy Experience. Attendees who have either gained coin themselves from previous airdrops or have purchased coin on the platform buy into the Experience and receive their ticket and QR code for entrance.

The event organizers advertise the need for Ticket Agent volunteers and are able to hire Experiencers who have enough KEX to provide this service free of charge. Other Experiencers can volunteer to work the event in exchange for the experience points which they can use for delegated gathering while at the event, thus alleviating the need to pay cash for their services. Vendors are attracted to the event as well since they will be able to gain KEX with their vending fee, thus allowing them to take part in delegated gathering while working the event. Also, they will receive all of the benefits of accepting KMX including near-instant transactions, zero processing fees, and increased sales from Experiencers spending the new coin they have gathered while at the event.

Artists and performers will be attracted to the event for the same reason. If they choose to, they can become a Creator and offer their own Open Experience within the festival, allowing attendees to pay them in KMX in exchange for the Experience they are offering, earning KEX. Not only will this essentially give them free money for their presence there but it will allow them to better network within the community and market themselves as they provide additional value to the overall Karmaconomy ecosystem. The event Creators can even use this as leverage to book talent without the need to pay them in traditional fiat dollars.

If the event is produced with good intention and is a success, the Karmaconomy will show it in the amount of KEX and KMX created and earned by everyone involved. After the event is over, Creators and Experiencers can choose to hold their earned KMX to attend future Experiences and gain more KEX, spend their KMX to become a Creator and offer new Experiences to earn more KMX, or atomic swap it for another cryptocurrency like Bitcoin.

XI. THE KARMACONOMY FOUNDATION

The Karmaconomy Foundation is a non-profit organization set up to manage and provide support for the public Karmex blockchain. The Foundation will be run by volunteers within the Karmaconomy and financed through donations. The goal is to turn the Foundation into a full functioning DAO run by a council of public representatives. These reps will be voted in by the community once a quarter. Polls will be taken within the Karmaship community on a monthly basis and voted on by the council. These will cover everything from bounties for Karmaship improvements and new dApp development to marketing strategies and events.

You will find the foundation website at www.karmaconomy.org.

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