



NKOR

New standard for verification and distribution of digital data

White Paper

v9.0

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Executive Summary

Introduction

Digital data distribution and protection of copyrights hold a major share in the global economy, and as more territories around the world become digitalized, this market share continues to grow.

Revenue generated globally from digital music downloading and streaming alone is estimated to reach around US\$20bn by 2021, with revenue from internet video expected to reach US\$19bn by the same year. To illustrate the size of online content consumption, 400 hours of video are uploaded on YouTube every minute.

Online marketplace transactions and related copyrights protection services count for around 30% of the entire size of the digital content distribution industry.

Problem

The existing legal framework and its incompatibilities with the online environment does not provide sufficient protection to creators for their copyrights, especially to “smaller” contributors who lack the abilities to safeguard their Intellectual Property from being downloaded, altered or distributed without permission, and to monetize from their creation.

From a community perspective, whether content creator or content consumer, in the current climate of centralized digital distribution platforms (for example YouTube), users’ privacy is almost non-existent, as all centralized platforms keep track on their users’ searches and exploit their stored personal details for marketing and generating revenue.

In summary – today there are no truly decentralized open marketplaces with the components required for fair content distribution, content analysis, plagiarism check, and transparent search of indexed content, which is not manipulated by a central hub for generating ads revenue.

Opportunity

Blockchain technology enables a basis for a seamless solution for registering, tracking, and distributing digital data, whether it is copyrighted digital content or content still unprotected by copyright laws.

Decentralizing the structure on which digital data is being distributed and IP protected will challenge the status-quo and revolutionize the existing marketplace of content distribution and copyright management.

Building a decentralized peer-to-peer ecosystem, which puts at its center the copyrights of content creators and enables them to distribute their digital work directly between community members, is part of the next evolutionary step in how data will be consumed and distributed in a more accessible, cheaper, and transparent way.

Challenges

Currently, monetization of digital content through tokenized assets' marketplace is mainly suited for media-oriented content types, such as music, paintings and books, in oppose to a blog post, a new algorithm, or an academic study.

Unforeseen regulation of cryptocurrency is always a looming shadow over the community. However, as a growing number of senior figures in the economical sector and top tier companies are starting to publicly shift favorably towards it, this shadow seems to gradually diminish.

Another challenge might be in the form of a slow integration into the market, as the ecosystem branches out to content creators who are not yet part of the community.

Solution

NKOR's groundbreaking technology for processing data, using a multi-layer index hashing algorithm, will be implemented on blockchain for the first time, revolutionizing the existing system of digital data distribution.

NKOR's novel technology authenticates digital data, which is then linked to a transaction on a blockchain via smart contracts, timestamps it to provide an immutable and publicly readable record of authenticity, tracks the uploading and sharing of the same content by non licensed entities, verifies the IP and copyright of content creators, and allows them to monetize from its distribution.

High Level Description

The teams behind HighTV and BizProfits are developing NKOR, a decentralized platform that utilizes the blockchain technology to create an autonomous, next generation marketplace for intellectual property (IP) and copyright distribution, enabling content creators to manage their creative work as a secure digital asset. Blockchain-based technology will be utilized to revolutionize and democratize the current status-quo, in which the entire system of distribution of content, royalties and copyrights of contents are generally controlled by large companies and industry intermediaries. This will be achieved by embedding a novel technology being developed by NKOR in a blockchain-based ecosystem.

NKOR's technology authenticates data, which is then linked to a transaction on a blockchain *via* smart contracts, timestamps it to provide an immutable and publicly readable record of copyright, and prevents the uploading and sharing of the same data by non licensed entities. We refer to this process of data authentication, its timestamping and cementing into a blockchain *via* smart contracts as **Anchoring**, hence – the **NKOR** ecosystem.

The NKOR ecosystem will be based on a cryptographic token called NKR. A tradable token with a fixed supply and the purpose of granting its holders with access to the functions of the NKOR platform and providing them interoperability with other digital services. The NKR token is fully integrated in the NKOR ecosystem and the participation in all of the platform's components will be done exclusively by using NKR tokens. Therefore, as the number of participants in the platform grows, the demand and value of the NKR token will rise accordingly.

NKOR will kick-off by releasing a platform that aims to revolutionize the content distribution and IP management industries. By combining blockchain-based technology with our advanced Anchoring technology standing in the core of the ecosystem, NKOR will be a facilitator in the next evolutionary step of decentralizing these marketplaces and making them more transparent, fair, secure and accessible to the masses. The NKOR platform will allow participants to register their

data, certify its authorship, track its usage, prevent copyright infringements and unauthorized uploading of the same content, license usage rights via smart contracts, execute payments and provide donations to content creators.

Due to the complexity of existing copyright laws, which typically vary from jurisdiction to jurisdiction, there is a need for a system that can ensure the content authorship of its creator beyond the “standard” realm of copyright laws that cover specific common media, such as audio and music content. Some copyrights or creative works are not sufficiently protected today, so individuals or companies creating new content, for example a new algorithm, might not be able to secure their innovative data from being copied or exploited. Moreover, in some cases, a copyright holder might not be entitled to seek damages due to infringement of copyrights, this situation might occur for instance if a copyright holder did not publish and/or register the work prior to the infringement. In such a case, the holder might not be entitled to statutory damages available by law. With the NKOR platform, content creators can safeguard their intellectual creation rights, as it will be incorporated to the blockchain with an immutable timestamp.

The Global entertainment and media outlook for the period of 2017-2021 researched by PwC shows that digital music consumption (downloading and streaming), which had remained flat between 2012-2015, is expected to rise due to newly developed business models and climb in value by the year 2021 to around US\$20bn. Internet video revenue is also showing a steady growth and expected to reach around US\$19bn by the same year. Another sector of online content which is a significant force in data consumption relates to video games, a major growth driver in the global online entertainment and media marketplace.

We believe that the penetration of cryptocurrency and blockchain technology into these markets will also show a growth trajectory, which is expected to be steeper due to the crypto community’s tendency to adopt changes and improvements much faster than “old-fashioned” centralized industries. We envision the NKOR ecosystem as a key component in the growing crypto economy of these industries and a catalyst in their decentralization process.

NKOR’S unique strength derives from a combination of our team’s technical ability to build the NKOR platform, which our already in-development novel Anchoring technology at its core, with the expertise and knowledge of the founders of the group in the field of data distribution and content management. This enables us to create a truly decentralized ecosystem for verification and distribution of data via blockchain technology, which will benefit content creators, buyers, innovators, and an exponentially growing audience of data consumers.

Problems

Intellectual property has a shelf life of a banana”, Bill Gates.



Verification of IP & Copyrights

Due to the difficulties of enforcing copyright and IP laws over the internet, it is getting increasingly problematic to verify authenticity and ownership of distributed digital data, even if the content piece is tagged with a license.

In countries with no central copyright registration authority, it can be difficult for an author to prove when their work was created or to prove authenticity and ownership of intellectual property. NKOR can be used to form a method of registered dating as a highly trusted source to date intellectual property, thereby establishing that the creation was in one's possession since a particular time.



Duplication of content

The same digital data can be uploaded by various entities claiming ownership of the content.



Non-existing privacy

The controlling content distribution platforms (such as Google, Twitter, Amazon) keep track of users' searches and personal details, which are then exploited for advertising revenue.



Intermediaries

A centralized marketplace is dependent on intermediaries facilitating transactions between the participants, such as agents, legal institutes, or the services of the sharing platform itself.



Manipulation of exposure to content

Centralized content sharing platforms generate large portions of their revenue from ads displayed on content they deem profitable, which they in turn display more often to their captive audience.



Alterable time-stamping of digital content

When pictures are taken with a digital camera, the exact date and time of the shutter-release are recorded on the image file, along with other bits of metadata. However, the timestamps are only as accurate as the camera clock which may be easily modified or tampered with by a simple computer command and software.

Creativity freed for intermediaries

A decentralized ecosystem provides a secure, robust business model of operations. The lack of a centralized point of failure alongside newly emerging nodes branching to new directions guarantees an efficient, direct, and cheap way to create and distribute content and data without the need of intermediaries.

The Solution

Overview

Enter Blockchain technology

Blockchain is a continuously growing public list of records which are linked and secured using cryptography. Blockchain is typically managed by a peer-to-peer network, allowing secure, transparent, and efficient method of transactions between participants, without the need for intermediaries.

Blockchain technology is being successfully and rapidly adopted by industries from all business sectors, ranging from financial services to tracking commodities.

Undoubtedly, one of the main industries to be revolutionized next by Blockchain technology and its derivatives will be online digital data distribution and copyright management. This assumption is strengthened by the growing number of publications calling for the implementation of Blockchain in this industry – especially in the larger sectors of audio, image, and video sharing, as well as in the inability of regulating authorities to properly enforce copyright and IP laws and combat the illegal download and distribution of digital data.

Enter NKOR Technology

NKOR is a first of its kind, next generation decentralized ecosystem that implements a groundbreaking technology of multi-layer index hashing and classifying in decentralized systems, currently under process of drafting patent applications, on Blockchain.

NKOR provides a platform for creators to cement their creation (data and content) on blockchain. The novel technology at the core of the ecosystem authenticates data that is uploaded to the platform, which is then linked to a transaction on a blockchain *via* smart contracts, timestamps it to provide an immutable and publicly readable record of the time receiving or creating or changing of digital data or digital content, and keeps track on uploading and sharing of the same

data by other entities to prevent plagiarism. The process of data authentication, its timestamping and cementing into a blockchain *via* smart contracts is called **Anchoring**, hence – the **NKOR** ecosystem.

The synergy between **NKOR's** and blockchain technologies will revolutionize and help democratize the existing structure of digital data distribution, IP and copyright management, by creating a seamless solution for registering, distributing and tracking digital data.

By Anchoring data on the **NKOR** platform and adding it on the blockchain, content creators can verify authenticity of their work, in a method which is inalterable and will last for posterity. In addition, since the **NKOR** marketplace enables participants to directly transact and trade data between themselves, the need for and the power of market intermediaries, such as agents, record companies and media sharing platforms, will be diminished, if not eliminated, making the distribution of licensed digital data cheaper and more accessible to the masses.

The users

Content creators

Writers, artists, musicians, designers, painters, photographers, software developers, and anyone with a creative flare or authorship of original data that required IP and copyright protection.

Content consumers

Anyone who wants to consume digital content, gain access to new venues of creativity which are not controlled or filtered by intermediaries, and support new content creators' artwork.

Copyright entities

Organizations and copyright lawyers that are committed to protecting the IP of their content creators.

Heritage & cultural institutions

Museums, Universities, institutions, organizations, galleries, etc., who are seeking to democratize their IP and make it more accessible to the masses, yet secure their copyrights in the process.

Industry players

Production companies, content platforms and social network that publish and distribute digital content from third parties.

The ecosystem offers incentives for individuals and companies dealing with digital content distribution and consumption to join it, as it creates a next generation platform that greatly benefits those involved in the digital content industry. A single entity can act as both a content creator and a consumer, and use all the tools of the platform accordingly.

Key Features

Federated Machine Learning – transparently controlled by the community.



Functionalities

- Multi-Layer index hashing
- Saving to Decentralized FS
- Block Registration
- Advanced Search
- Value Analysis (via index creation)
- Content Publishing & Distribution
- Plagiarism Check
- Social Network
- License Distribution
- Content Marketplace
- Computing Power Marketplace
- NMIA (Neuro Indexing Algorithm)
- NSE (NKOR's Index-Based Search Engine)



Distributed Content

- Documents
- Pictures
- Screen displays
- Audio
- Video
- Databases

Users

- Content Creators
- Content consumers
- Copyrights entities
- Heritage and cultural institutions
- Industry players
- Community maintainers
- Arbitration Oracles

Economy

NKOR will be a fully decentralized information-based platform which hosts three different markets:

- Content distribution market
- Computing power market (for providing computing power for content analysis, indexing, and searches).
- AI-based analysis market for algo developers, for improving content research and activity analysis.

Participants in each of these markets can generate self revenue per their contribution to the ecosystem, as follows:

Content creators

Receive payments for their work from content consumers:

- Original content can be cryptographically protected, indexed and shown as a preview on search results, where content consumers can purchase access to receive the full work.
- Original content can be published at its entirety and licensed per usage.
- Royalties payments from references to original work by other content creators.
- Payments from including original work on a data set of an algorithm executed by a Worker Node (for example to do a plagiarism check or analyze the content in more details in order to improve indexed search results).

Worker Nodes (hardware owners) & validators

Hardware owner providing their computing resources in order to earn from mining (PoUW).¹ Computing resources are required for operating the function of the decentralized ecosystem, including content analyzing, indexing, running algorithms by developers, and aggregating results.

Validators are consensus regulators, which perform the computational checks and verification of the correct work of the nodes. Validators are the main participants in case of arbitration and have the highest stake and reputation in the system.

In the last step, when the Market of Analytics AI-based Algorithms is added, Algo developers will earn from the usage of their developed algorithms.

¹ Proof of Useful Work

Reputation and stakes within the ecosystem

Reputation and Stakes serve the purpose of distinguishing the quality and contribution of participants in the ecosystem. *Reputation* represents a score a node gains for doing a fair job, and *Stake* represents the penalty in tokens a node will receive if providing faulty computing results.

Reputation relates to content creators and hardware owners and affects the potential profits they can earn. The more positive reviews content creators receive from buyers who purchased their work, the more credibility and visibility in the search they get. Reputation is a multidimensional parameter but finally it'll map to a real number between 0 and 10. Initial reputation will be set to 2, and only nodes with reputation 4 are able to participate in governance and voting.

Hardware owners that provide computing power comprise a sought after market, therefore, their minimal **stakes** will be moderated in order to keep the entry barriers low.

Computing Nodes with good reputation may be rewarded with increased chances to receive additional tasks and gain additional revenue. To ensure the quality of the computing nodes and their accuracy, a small part of each task will be given for computation to a random validating node to check for errors in the results.

Incentives (economic and growth)

Content creators and also developers gain reputation for their work and generate revenue from its licensing. As such, it is in their best interest to provide precise description of their work for indexing, as content consumers can rate and review purchased content for the benefit of other content consumers.

Content consumers are motivated to leave honest reviews, as only verified content creators can participate in rating works and reviewing them. Verified accounts are those who actually purchased content in exchange for tokens. It might be possible to publish false review, however – that will be in the cost of paying for the calculations, which makes false reporting an expensive and ineffective strategy.

Worker Nodes are incentivized to provide correct calculations and stay available in order to gain collateral stake and higher gains of the payments.

Validating Nodes are incentivized to audit Worker Nodes in a truthful manner, as they gain payment by discovering faults, and loose stake if reporting falsely. These computing nodes are the ones which simultaneously have high reputation, which was gained over time as working nodes or as arbitrators), and high collateral stake.

Validation and Arbitration

The initial idea is to use standard KYC methodology, likely via partnership with an external firm specializing in KYC for blockchain based enterprises. After all parameters of the validation algorithm will be fine tuned, this will be replaced with a decentralized methodology, in which Nodes are validated by other Nodes rather than any central authority. One approach here is essentially a “verification federation” consisting of Nodes that are democratically approved to perform validation and arbitration functions. The ultimate goal is to balance decentralized control and operation with protection against exploitation of the democratic governance framework by wealthy and powerful outside entities.

The amount of voting power and validation abilities a Validating Node has, regarding core network operation issues will be initially developed using formula:

$$V = \ln(S(N_v)) * \sum_{N_w \in Y} \Phi(S(N_w))(R(N_w) - 3)$$

- V – amount of voting power
- $S(N_v)$ – the stake function which takes particular Voting Node N_v as a parameter. So $S(N_v)$ is the total stake of Voting Node is the amount of NKR token holdings across Worker Nodes
- $S(N_w)$ – the stake of a particular Worker Node N_w
- $R(N_w)$ – the reputation function which takes particular Worker Node N_w as a parameter. So $R(N_w)$ is the reputation of Worker Node N_w
- Y – set of Worker Nodes N_w across which token holding of Voting Node N_v are distributed;
- $\Phi(s)$ – conditional regularization function which takes the result stake function S as a parameter. Let denote result of a stake function S as a little s here and define $\Phi(s)$:

$$\Phi(s) = \begin{cases} r * s, & s \leq C \\ r * (C + \ln(s - C)), & s > C \end{cases}$$

- C – boundary which we can tweak. Depending on C condition function behaves piecewise linearly or logarithmically. We can initially set it to some amount of tokens. It could be 30,000 of NKR tokens;
- r – normalizing factor;

Reputation and stake combination using this formula gives more voting power to more highly rated entities, but also prevents against gaming schemes involving creation of large numbers of tiny Nodes which are highly reputed but carry out few transactions each.

Also we need to define the process of validation and arbitration of computing results. Test of published results will be done in several rounds:

- Define portion of tasks or whole task (if the task was very light (e.g. search)).
- Recalculate by Validating Nodes.
- If the validating node doesn't match the result, the computing node is banned, losing its stake and reputation, unless it raises the stake and proceeds to arbitration.
- If process goes to arbitration then depending on complexity of the task, some number of random Validating Nodes are chosen. This number starts from 5.
- If all Validating Nodes came up with the same result, then consensus is reached.
- The Worker Node or the Validating Node that was found faulty is banned and its stake is distributed among true result providers.
- If there's no consensus between the chosen Validating Nodes and/or if the node that was found in fault raises the stake, process goes to next arbitration.
- In this arbitration, the validation process is crowdsourced and the participation in the arbitration is opened to any node in the network with high reputation or high stake.
- Participating in this arbitration benefits nodes by gaining the reputation.
- Once 66% of the participating nodes reach the same result in a predetermined amount of time, consensus is reached.
- If the opposite happened and 66% was not reached, all participants lose part of their stake.

High interest to participate in arbitration is expected due to its posing a rare chance to gain reputation quickly and incentivized to do the checking and the reporting of the calculations truthfully. Since in the case that the participants are not able to achieve 66% consensus their stakes are penalized. We will experiment with such parameters as initial number of Validating Nodes and percent of crowdsourced consensus.

NKOR Consensus Layers and Mining

Initially, NKOR is bound by Ethereum's approach to consensus, whether proof of work or proof of stake. If the network transitions to its own blockchain or a different third party one, there is a preference to implement proof of stake as the initial consensus protocol due to its simplicity and environmental friendliness, also we are considering to test of logic on Casper - Ethereum PoS protocol. This assumes remaining vulnerabilities with proof of stake consensus algorithms such as "Grind Staking" and "Nothing to stake" attacks have been successfully solved by the community.

In the long run we intend to test the implementation of an evolution of the proof of stake with so-called *Proof of Reputation*, which combines several factors that are: stake, overall activity in the network, specific rating aspects, activity over time and rating levels above specific thresholds, etc. In order to find the optimal combination of reputation factors we can use combination of Machine Learning, Markov Chains and Simplex Methods.

Some component of proof of work may also be desirable, but we would rather have such work go to solving some beneficial analysis, scoring and searching problems than burn cycles on cryptographic puzzles. The computational cost of these machine learning tasks varies much more than most crypto puzzles, so this idea needs more refinement over the next few years. It seems most likely that, at the end of a period of refinement and experimentation, we will end up with a machine learning based proof of work component within a broader *Proof of Reputation*.

We are planning to start with worker nodes and validators system as p2p network protected by validation and arbitration consensus which includes reputation, stake and computational work, which we will call in future as *Proof of Useful Work*. After we test our consensus enough to prove its scalability and stability we will open it to everybody who wants to earn money providing their computing powers. Initially all the information about all computations and links between them will be implemented and stored as a number of reasoning, learning and understanding oriented software processes acting together on a common weighted, labeled hypergraph. We will register all information in our distributed ledger, so only simple business logic will be implemented on Ethereum which makes the system really independent from type of the blockchain which can be used if future. Also, to incentivize computing power providers to join NKOR network we will provide generated fee to block creators via coinbase transaction in the NKOR network. Such "mining" will provide more interest to "miners". Where the probability of block creation will depend on reputation, stake and amount of fair work.

That's why NKOR network uses **two levels of consensus**:

1. Blockchain-level consensus that secures network non-computational transactions. Initially, NKOR will use the Ethereum blockchain, however in the future EOS may be considered.
2. NKOR chain consensus with PoUW algorithm that secures computations and performs mining of NKR tokens based on completion of useful work.

NKOR chain will operate as a separate network in order to be able to create optimal consensus params and do all proves. We are working on creating such optimal parameters using Theorem Provers and knowledge of Game Theory.

The main interesting thing here will be to prove an ability to provide fair mining fees for partial network load based on computations, e.g. *one work should be done only once, but checked in advance*, so total network load will be reduced from $O(bN)$ to $O(b)$, where N is a number of computing nodes in network and b is an amount of computations.

Token mining which is based on Proof of Useful Work (PoUW) represents a much more efficient form of consensus than PoW algorithms and is secured by arbitration and validation processes.

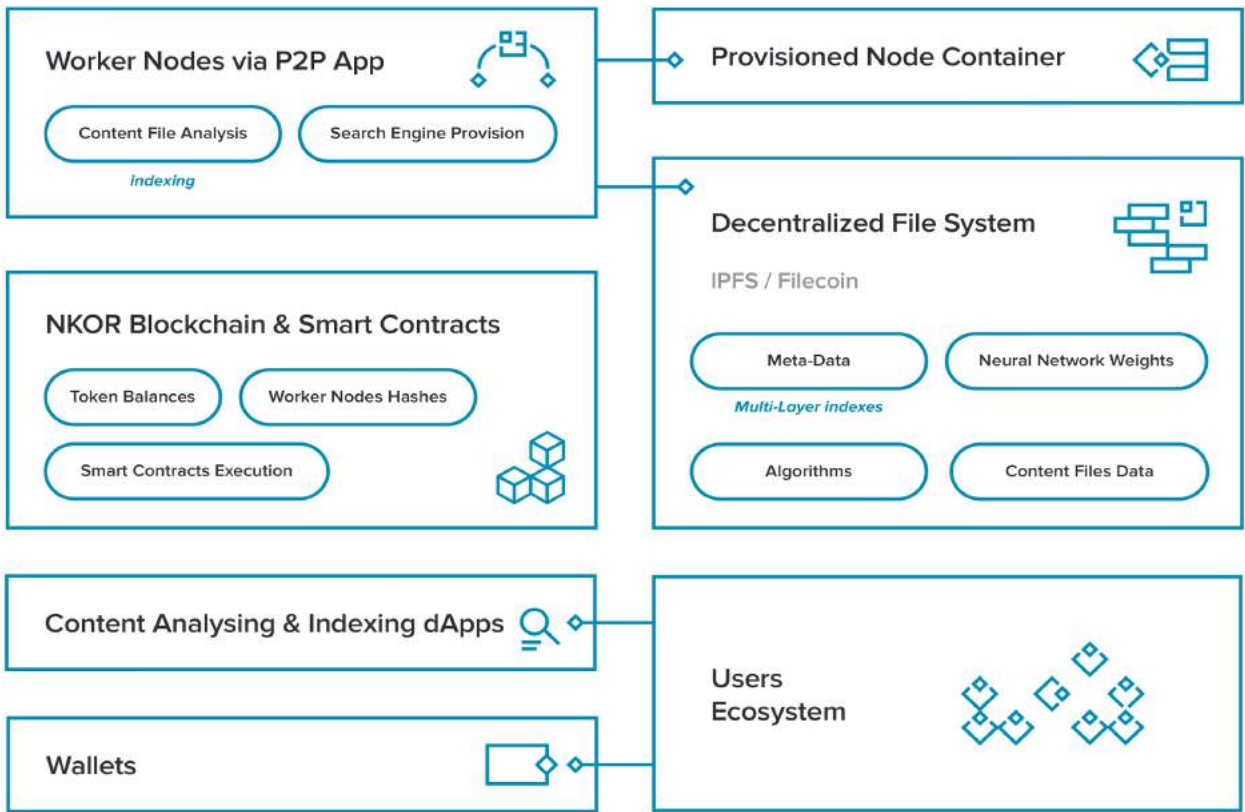
Architecture

Why blockchain and how it's embedded with NKOR

Blockchains security model is enforced by the entire network, instead of by one centralized authority. Once a transaction is confirmed, it becomes part of an immutable public ledger that is distributed across a global network of nodes, which makes it practically impossible for anyone to alter data recorded on the blockchain. On top of that, NKOR's innovative technology is making it simple to anchor virtually unlimited amount of data to a single blockchain transaction.

Users that need a timestamp to protect their content; to track their copyright's distribution on a blockchain in a decentralized way, and to profit from trading their rights, start by visiting the NKOR website and signing up for a free account. After registering on the platform, they upload their digital content to the platform's database. Having passed the procedure of content certification, the content is assigned with hash marks and added as a block on the blockchain, which enables participants in the ecosystem to monitor the use of their content, manage their copyright certificates, and conduct any joint activities with other participants of the platform.

Anyone can register and upload any kind of digital content, whether it's a photo taken with a mobile phone or a movie weighing several gigabytes. Every user has a profile for managing owned certificates. After the upload, the service tracks online usage of the uploaded content and alerts the content creator in case of unauthorized usage, thus preventing plagiarism.



Technology

The technology applied for building the ecosystem consists of different data analysis techniques per file type uploaded, including Artificial Intelligence, which is transparently federated by the community to provide wider insights regarding the value of individual content pieces to the users.

The operating method of the system will consist of the following base pillars:

- Maintainer nodes which provide computing power for:
 - Precise content analysis.
 - Content indexing (in order to make search experience more advanced).
 - Plagiarisms check and prevention.
- Decentralized storage for
 - Files.
 - Meta information.
 - File indexes.
 - Algorithms schemes.
 - History of updates for models (e.g. weights for Neural Networks).
- Consensus algorithm based on voting, arbitration and stakes for worker nodes system.

Anchoring

“Anchoring” is at the core of the NKOR’s platform. With this technology we can cement the authorship of the content creator, which in turn helps creators gain audiences, profit from their creativity and create freely without the need of industry intermediaries.

Transactions and functions on the platform will be processed via the NKR token, which will enable token holders to register content, authenticate it, distribute it securely, track it, buy licenses to content, decide the nature of the tradable content within the ecosystem, and more.

A disruptive concept that will revolutionize the way content is distributed.

NKR token holders can use our developed anchoring technology to help protect their IP and monitor the use of their content as it spreads across the platform.

after registering on the platform, content contributors can scan their content to NKOR's database, where it will be verified for authorship. Afterwards, the content will be assigned a digital hash mark with a timestamp and added to a block on the blockchain, making it unalterable by a 3rd party, unduplicable, and tractable for loyalties and donations payments.

Distribution of content

The NKOR platform allows content owners to sell their intellectual property to interested buyers, exchanging certificates and maintaining a high level of transaction security.

This direct transaction between the authenticated copyright owner of the content and the buyer eliminates the need for agents, lawyers, patent attorneys and other 3rd party participants, making the transaction process completely transparent, simpler and cheaper. The transfer of copyrights occurs on a blockchain, thus guaranteeing its validity by the entire community of the NKOR's ecosystem.

Also NKOR platform makes it possible to track and refer a new content to existing content sources registered on NKOR platform, to provide so-called NCI(NKOR citation impact), you may think of it as an analogy of h-index². So, new authors can tag works of authors they cited from and create a chain of citation and references on the blockchain. In this way cited authors will also receive a fee from selling content which tags their creations as a source of citation or inspiration.

And it is absolutely possible to register free content on the NKOR blockchain just setting a free license to it.

Smart contracts

NKOR will apply smart contracts as a protocol to ensure fast, secure, cost-efficient transactions. Participants of the NKOR ecosystem can incorporate any type of license into a smart contract in

² h-index is an *author-level metric* that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other publications.

order to seal assignment agreements or to sell and distribute their content via channels and communities across the platform.

Contracts based on methods of distribution that favor collective creation:

- Ability to buy full ownership of content (buy a licence)
- Ability to use content
- Ability to distribute dividends as participation for investors. Benefits from the distribution of the content are distributed automatically between token holders.
- Ability to reference to the content in own work

NSA (NKOR Search Algorithm)

Registration on the NKOR platform offers three basic registration types: Anonymous, filterable, public.

Participants can provide full or partial data regarding their profile, as well as protect their data with multi factor authentication, thus having more control regarding the exposure for their content or profile, which can be public or hidden, on the internal search engine of the platform (the NSE). Users of the platform, even if they set their profile to hidden, can still have the ability to find other public users. The NSE performed searches are based on filters and indexes, where all hashed data from the search go to the ledger.

NNIA (NKOR Neuro Indexing Algorithm)

NNIA is an algorithm developed by NKOR for checking and indexing files on the platform. It operates in the following steps:

- File type processing
- NKOR Worker Nodes searches file system (IPFS/FileCoin) where Indexes are stored and searches using NKOR Indexing Engine which is provided by worker nodes to find fuzzy matches. The search applies statistics and NKOR Deep Reinforcement Core Module (NDRC).
- File is encrypted and stored to file system.
- Based on license type, files is marked as either opened or protected.
- User pays fee for registration request and file storing using file system. Fee is based on file size.

- An incorruptible and inalterable time stamp that allows to certify the authorship and license of use or distribution of the file is hashed, and it's added to the blockchain. In this way the platform becomes a book of public records that can be consulted and verified.

File processing and publishing

NKOR supports the registration of any standard content-type file, for texts, audio, video and photos. Content creators can either upload the file directly to the database, or provide a link to the file via Google drive, Dropbox, and OneDrive. In addition to the file, the content contributor is required to provide the license type of the file, depending on which, the corresponding Smart contract options abilities will be applied.

The NKR token

The **NKR** token will be implemented on the public Ethereum blockchain as an ERC20 token.

The Ethereum blockchain is the industry's standard for issuing custom digital assets and smart contracts. The ERC20 token interface enables the development of a standard token which is compatible with the existing infrastructure of the Ethereum ecosystem, such as development tools, wallets, and exchanges. Ethereum's ability to deploy Turing-complete trustless smart contracts enables complex issuance rules for digital financial contracts and cryptocurrencies.

NKR purposes and usages

- The **NKR** token is the main driver behind the activities of the **NKOR** ecosystem, and the participation in all components of the ecosystem will be done exclusively with it.
- **NKR** offers a convenient way to execute purchases, micropayments, donations, registration and protection of digitally created content.
- **NKR** serves as the basis of interoperability with other digital services.
- Enables access to the copyright management toolkit.
- Allow creation of public versions of content for purchasing
- Track content usage as it spreads across the ecosystem and verify licensing rights
- Grant access to Smart contracts
- Perform content analysis, comparison, and index hashing
- Change ownership of content and its status (private/public)

Tradability, liquidity and volatility

The NKR token is a single currency, fully embedded into the NKOR ecosystem. All functions on the platform are available exclusively to NKR token holders. Our aim is to list the NKR token on all major exchanges.

Benefits

NKOR's mission is to place the control over copyrights and Intellectual Property in the hands of content creators, while enriching the community with peer-to-peer access to unlimited creative content and innovative data.

NKOR will empower content contributors and free them from the restrictions of a centralized marketplace, high fee charges and legal vulnerabilities, which are major flaws in the current system, by introducing a next generation, fully decentralized platform for registration, authentication, and distribution of data.

NKOR will offer a Peer-to-Peer distribution network of digital content, in a fair, transparent, decentralized platform, that will empower content creators and draw them to join the cryptosphere. This will also add to the growing cultural enrichment of the crypto community.

NKOR's team already has a successful track record in distribution of digital content to mass audiences from both a technical and business development perspective. The knowhow that the team brings, including an extensive legal knowledge of the IP management and content distribution ecosystem and its regulatory framework; a profound understanding of the importance of marketing, transparency and accessibility; and its accumulated shared technical experience in coding and development, constitutes a significant competitive advantage that will enable us to reach the critical mass needed for the ecosystem to succeed in grow quickly in the community.

NKOR ecosystem will solve the existing problems in the market as follows:

Help protect content creators' copyrights and IP

NKOR enables content creators to timestamp their digital data, track the usage of their content, and benefit from its consumption by licensing it or by receiving donations. The multi-layer indexing of data which is at the core of the **NKOR** ecosystem protects their IP, prevents the original content from being misused and prevents uploadings of the same digital data by others.

Empower content contributors

NKOR is a true next generation democratic ecosystem for data distribution, which means small content creators, who were not able to break through and gain exposure to their content in the current available platforms due to existing entry barriers, will finally have a fair decentralized marketplace where they can gain traction for their content.

Eliminate intermediaries

NKOR is a peer-to-peer marketplace where participants directly interact with each other. This eliminates the need for intermediaries and for a centralized platform, leading to faster, cheaper, and more dynamic transactions between the participants.

Bring disrupting technology to a major global industry

The novel implementation of **NKOR's** multi-layer index hashing on blockchain technology for the first time is a major catalyst in the transformation of the existing digital data distribution platforms, such as YouTube and Amazon, to decentralized and democratized marketplaces.

Market Landscape

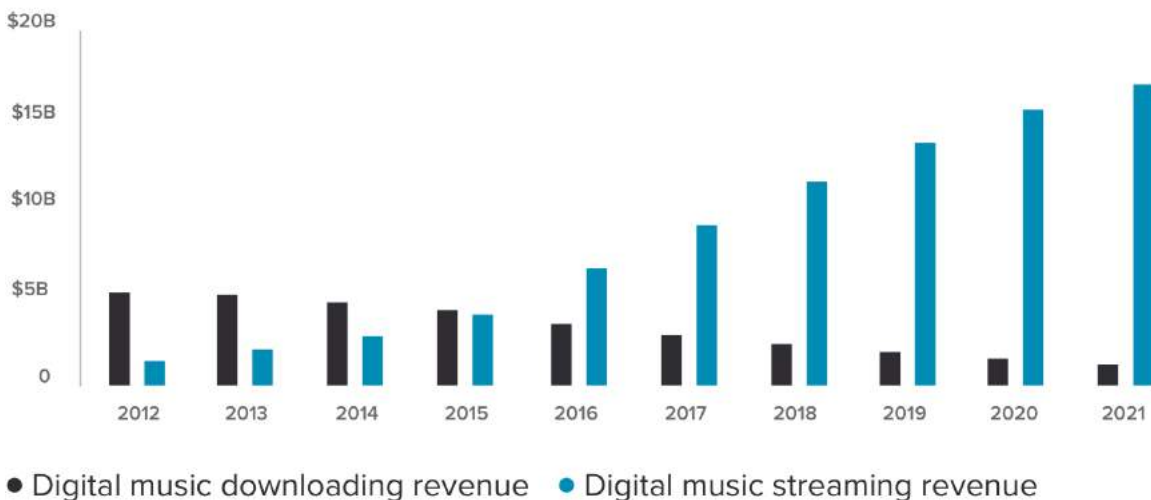
Market size and projection

“Industries with disproportionately large shares of intellectual property are ... the most rapidly growing industries in the U.S. economy”, “I see no obstacle to intellectual property’s share of GDP rising into 2030”, Alan Greenspan.

The two most recently published PwC researches of “Perspectives from the Global Entertainment and Media (E&M) Outlook” (for the years 2015-2021), show a rapid growth of E&M revenue generated over the internet, with revenue from internet video and online video games forecasted to be major growth drivers. As a reference to illustrate online content consumption, 400 hours of video are uploaded on YouTube every minute.

When it comes to revenue generated globally from digital music downloading and streaming, it is estimated to reach around US\$20bn by 2021, with revenue from digital music streaming dominating the chart.

Global digital music downloading vs. digital music streaming revenue (US\$ billions)



Source: Global entertainment and media outlook 2017-2021, PwC, Ovum

Another major contributor to the growth in digital content consumption and its corresponding revenue is the evolving nature of digital technology, which constantly creates better direct-to-consumer content consumption environments, that facilitate better accessibility to digital content in markets that until recently were less digitized, and are still on their way to reaching the same technological level of the more westernized countries.

NKOR ecosystem's participants (content creators and consumers) will benefit from this enormous market share of the industry, as the platform creates a way for creators to distribute their content in a secure and transparent way to newly discovered mass audiences. This will facilitate a new vast, untapped "blue market" with an estimated value of billions of dollars, where every megabit of data will finally be appreciated at its true value and delivered directly to the creator.

Competitive analysis

Investments in blockchain technology and TGE's have become a major attraction within the investments sphere, due to the industry disruptive changes and growing adoption of blockchain technology across various industries.

We believe that the next industry to be revolutionized by this technology will be the online media sharing and content distribution industry.

This assumption is cemented by the growing number of publications calling for the implementation of blockchain technology in this marketplace, especially in the larger niches of audio, video and images, as well as in the inability of regulating authorities to properly enforce copyright and IP laws and combat the illegal download and distribution of content, which damages not only big companies, but also the "smaller people" who are affected the most economically and creatively.

Competition

There are several projects dedicated to decentralizing the existing systems of digital content distribution and copyright management, as well as several currently mainstream marketplaces, the ones most similar in concept to NKOR:

CreativeChain

Using litecoin code with own PoW mining, CreativeChain's aim is to create a chain of all content uploaded on their ecosystem using references to link the uploaded content pieces to each other, allowing content creators to track the usages of their content across the system.

NKOR will establish a full marketplace, with advanced functions for users, including content analysis and robust self sustaining economy, based on a Worker Nodes system that will facilitate the decentralized the different markets within the platform.

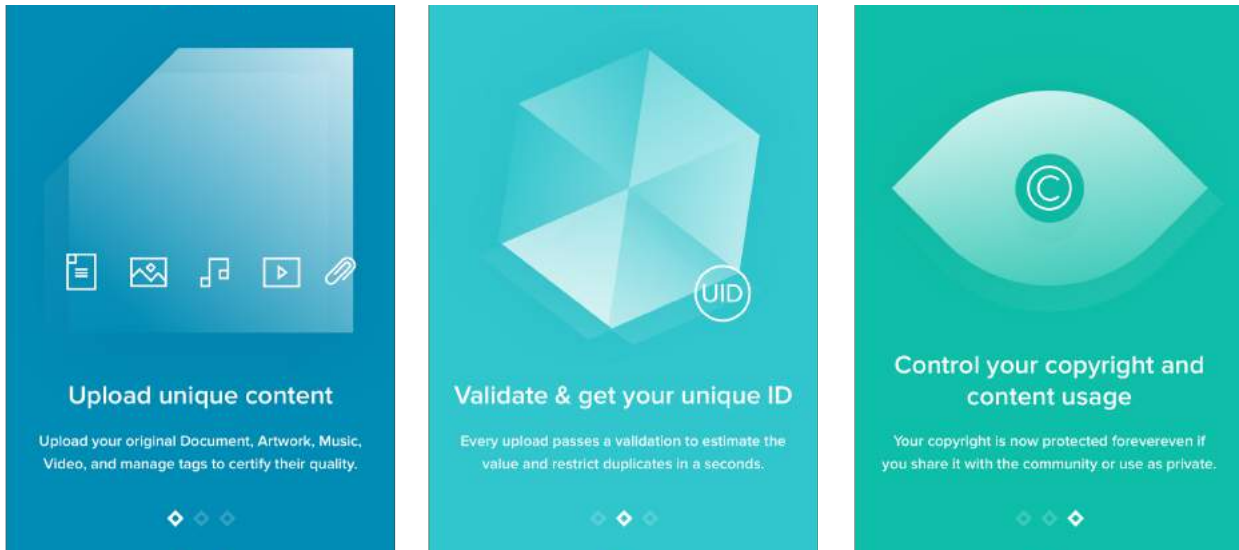
Tierion, StorJ, Golem

Decentralized file storage and computing platforms, which – although allow uploading of data to their databases, they do not provide any tools for IP protection, content search and analysis.

Amazon, iTunes, YouTube

Centralized content distribution networks are a competing industry, as being a centralized hub for digital content distribution provides a source for accumulating massive fees and data about users' preferences.

NKOR is a decentralized platform, where user's data is kept private, and the transaction between the members is done directly.



Challenges

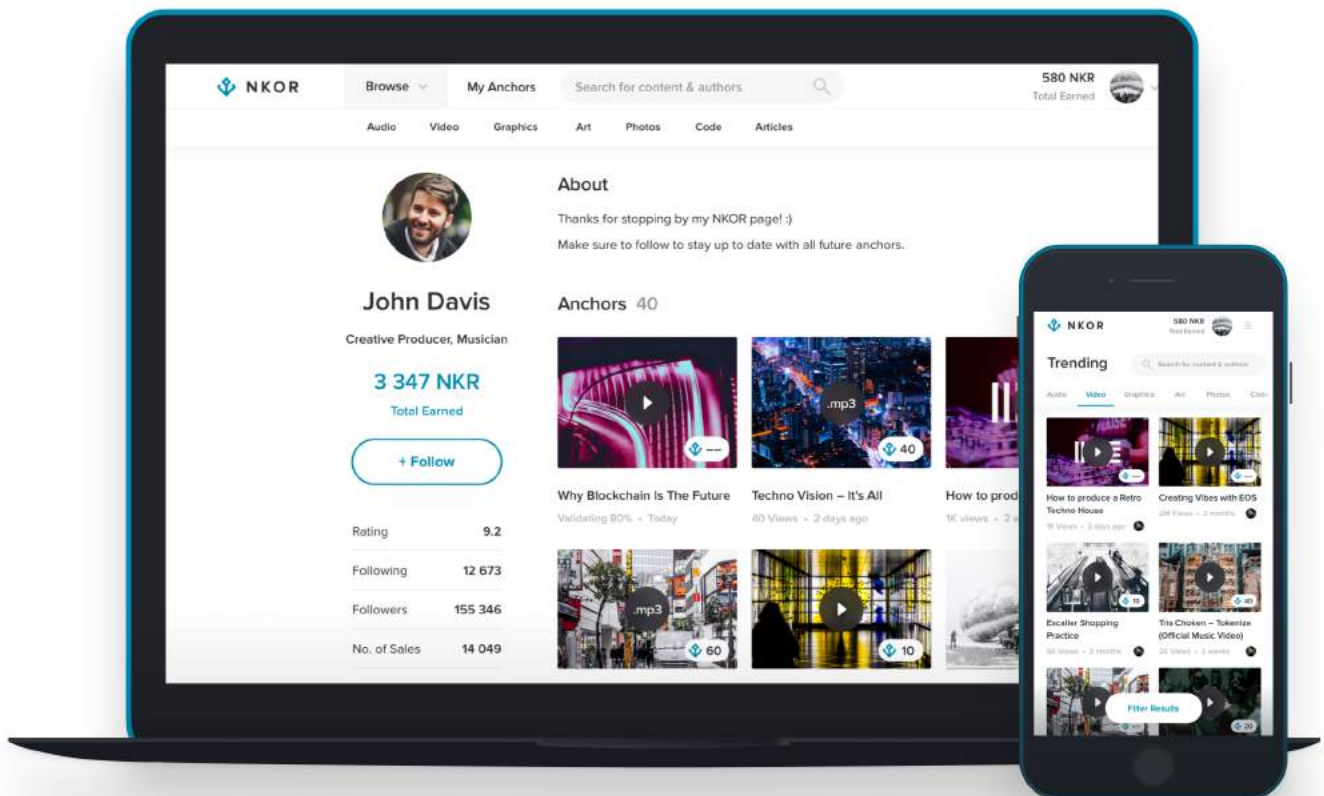
The main challenges facing the NKOR platform:

- Content can still be copied and distributed without permission of its creator.
- Monetization of digital content through tokenized assets may be considered to be better

suitable to specific types of content, such as music, visual art and books, than to other types of content, such as blog posts. It is easier to consider purchasing visual art, books and music using rare tokenized assets than purchasing blog posts. However, the underlying smart contract technology allows writers to monetize their work without putting content behind a paywall or relying on ads.

- Large content networks like Facebook and Soundcloud could develop blockchain-based marketplaces for digital content.
- The problems generally associated with smart contracts are also applicable here: even when they are written by skilled developers, they are vulnerable to errors.
- Unforeseen regulation of cryptocurrency in the future, which might affect NKR's value.
- Slow penetration into the market

NKOR will address all potential technical challenges, while provide in parallel an array of solutions to problems facing the industry today. As for regulation and penetration into the market, NKOR's team is accompanied by top tier professionals that supervise all legal aspects of the project and set the marketing course based on their extensive acclaimed experience.



A sustainable economy

As the NKR token becomes more widespread within content creators and content consumers and used by increasing number of members, the network effect of the services offered within the NKOR ecosystem will grow and generate appreciating value.

A successful economy requires the NKR token to gain a growing demand from both within and outside of the NKOR network. Since participation in registration of content and its consumption on the platform require users to acquire NKR, and since the platform offers to countless numbers of artists, scientists, academics, and anyone who produces digital content and rely on the internet for exposure and distribution of their content, a way to help protect their copyrights and capitalize on its consumption, the demand for NKR, which is issued in a limited amount, is expected to grow exponentially as more users join the ecosystem.

Tools for growth

Creators are incentivized to upload original content to the NKOR network and to share it with content consumers. By doing so, content creators can increase their audience and fanbase, track and protect their copyrights and IP, and benefit from direct payment of royalties when applicable and donations from other participants of the ecosystem.

Content consumers are incentivized to join the NKOR ecosystem as it offers them access not only for digital content which is kept in its original high quality form, but also to countless not-yet-discovered content creators, that otherwise might have not gained exposure. An analogy for this will be content creators that uploaded their content on YouTube when it just launched and as a result were able to get discovered, gain new audiences and even fame.

NKOR aims to provide a full gamut of services surrounding digital data distribution, copyright and IP management as part of its roadmap. The first tool of growth will be in the form of the platform's Anchoring technology, which records and tracks content on the blockchain as it's distributed across the ecosystem. This will provide a catalyst for content creators to join the platform, even if they are not yet part of the crypto community, which will increase demand for the NKR token as the platform reaches new audiences.

The innovativeness of the NKOR ecosystem comes from the creation of a next generation platform based on blockchain technology, one of the most powerful catalyst of the internet, that will provide a required solution to an old-fashioned multi billion dollar marketplace, bringing a

disruptive change to the digital data distribution industry, making it more accessible to massive mainstream audience consumption. The addition of mainstream audiences to the ecosystem over time will provide the liquidity pool for operation and growth, while basing all transactions inside the ecosystem using a single coin will guarantee interoperability between the participants or other platforms.

Roadmap



The end goal for NKOR is to establish the leading decentralized data distribution network which is accessible and used by mainstream audiences.

NKOR's main role is to develop the technology required for building the platform and network, maintain its smooth operation, and create incentives for entities, from within and outside of the community to join in order to facilitate faster growth. To achieve this goal and the long-term viability of the ecosystem, the following roadmap will be used as a guide:

Milestone 1 – Anchoring is born

After the crowdfunding, the first step will include the implementation of the platform's technical foundations according to the guidelines outlined above, in cooperation with the community in order to achieve the most optimized model.

The core of the platform will use a set of smart contracts, aimed to execute the behaviours of the ecosystem and its separated marketplaces – the official smart contracts will be published on GitHub

Development of the NKOR platform and First Part of Software for Worker Nodes

This period is dedicated for the creation of smart contract based backend as outlined in the whitepaper, as well as for testing and tweaking the consensus PoUW parameters for the Worker Nodes network. Tweaks and modifications will be done in accordance with feedback and ideas for improvements received from the community.

NKOR will use a set of Ethereum smart contracts:

1. ERC-20 for the NKR token.
2. Lottery libraries for worker nodes
3. Content publishing and selling contracts
4. Useful Job contract for worker nodes

Building steps

The first step will be the development of provisioned backend containers for worker nodes in order to provide test functionality. On top of those, two main NKOR network algorithms will be developed: NNIA (NKOR Neuro Indexing Algorithm) for text based content and NSA (NKOR search algorithm), which will initially be based on NKOR's own nodes to provide stable computing power for the ecosystem.

Based on the above algorithms development, the following services will become available for participants of the ecosystem:

- Indexing and value/uniqueness analysis
- Content searching
- Claiming to arbitration

Milestone 2 – Development of NKOR DApp and Second Part of Software for Worker Nodes

The NKOR DApp is planned to be added on top of the backend development established during milestone 1. The application's code will be released as an open source, and screenshots will be provided in repository, opened for the community's feedback in order to reach the best development results.

This step will also include the implementation of all interface integrations with smart contracts, nodes, file systems (IPFS/Filecoin) and p2p applications, such as Whisper for messaging.

In addition, more complex algorithms will be added on top of the NNIA to support additional content, such as audios, videos and algos.

AI and Neural networks

After implementation of the above algorithms, algorithms based on Artificial Intelligence and neural networks will be used as basis for work, where the end goal is the implementation of federated machine learning techniques, where correct computations on different worker nodes will improve neural network weights and save it to the IPFS for further usage and improvements. This development will include an extension of NKOR's consensus mechanism, that can do gradient check and verification of improvements in the accuracy of neural networks.

Milestone 3 – Security Audit and Platform Launch (Beta)

Once backend and frontend are completed, security testing will take place, as final preparation for platform launching.

For security testing, testnet will be launched and NKOR's nodes will be accessible to support cold start issues that might occur.

During this step, *arbitration nodes* for resolution of problems or claims regarding content rights will be added to the platform, as a basis for follow up at milestone 5, in which the worker nodes with the highest reputation and stake in the community can also become arbitration nodes.

After all testnet checks and security audits, the NKOR's beta version will be launched.

Milestone 4 – Development of NKOR community

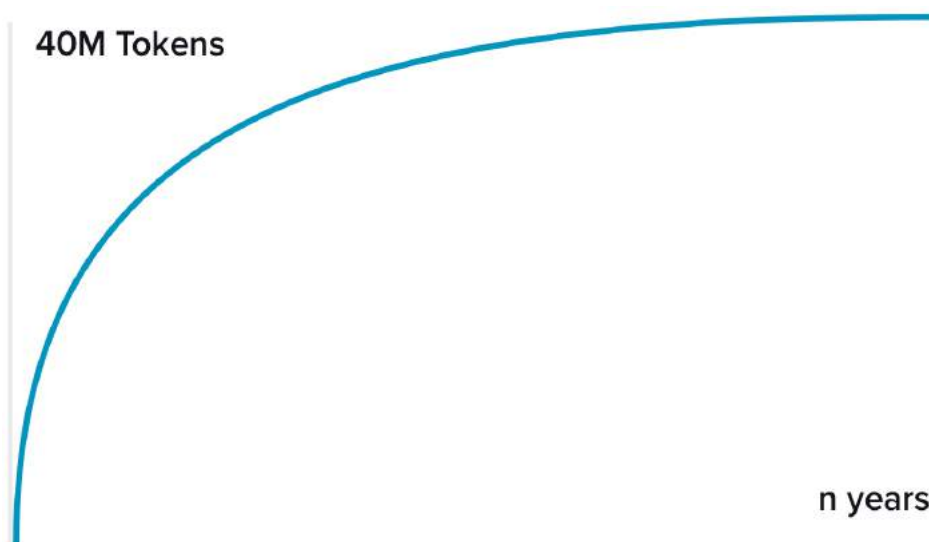
NKOR will reach content contributors and consumers in the community through various social platforms, including telegram groups, forums discussions, Facebook, Twitter campaigns, and newsletters. All questions regarding the project by the community and investors will be answered by NKOR's dedicated team, from technical and financial, to marketing. In addition, a bounty program will be launched to provide incentive for the community to promote and help grow the reach of the ecosystem.

Milestone 5 – Computing nodes integration

With the majority of the required technology for operating of the NKOR platform tested and working, the next step will be adding the ability to start mining using PoUW by computing nodes, including the ability to create new algorithms for them.

After the community grows, the consensus algorithm will be used on a growing number of nodes, and the mining curve for PoUW will be redefined at this stage to support the larger consensus algorithm network, it's stability and fault resistance.

We will define mining curve using optimal asymptotic function.



The Team

Founders



Eric Klein

Co-founder and CEO • [Linkedin](#)

With more than 11 years of experience in the media industry, the majority of which in senior corporate management positions, and a Masters in law, Eric holds invaluable knowledge in digital media distribution, content representation and intellectual property management.



Ami Inbar

Co-Founder and CMO • [Linkedin](#)

Ami is seasoned internet entrepreneur and marketer with 18 years of experience, and several very successful internet and digital commerce ventures under his belt.

Ami is renowned in the online industry for founding BizProfits, a leading CPA networks and an industry leader in performance marketing.



Elisha Ben Tamar

Co-Founder, Legal Advisor and Investors Relations • [Linkedin](#)

In addition to specialising in international trade laws and practices, Elisha is a well experienced businessman with a versatile portfolio spanning various industry sectors.



Ivan Didur

Co-Founder and CTO • [Linkedin](#)

Ivan has more than 4 years of developing private blockchains, 5 years of experience with AI, Big Data and Distributed Systems, and an ongoing research in federated reinforcement learning field. He is the CTO and Co-Founder at DataRoot Labs – one of the largest AI & Big Data teams in Ukraine, and serves as an associate professor in the blockchain school in Kiev.

Advisory



Ophir Gertner

Founder at invest.com

Founder at Stox

[Linkedin](#)



Yoav Barel

Product Marketing Advisor

[Linkedin](#)



Dr. Hadar Mazor

Patent Attorney

[Linkedin](#)



Andrey Yashunsky

Partner at Da Vinci Capital

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Max Frolov

Co-Founder & CEO at DataRoot Labs

Co-Founder at Blockchain School

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David Mickler

Founder at Quintessentially Ventures

[Linkedin](#)



Yevhen Kasyanenko

Strategic Business Consultant

[Linkedin](#)



Anatoliy Melnichuk

Co-Founder & CEO, SnapSaves

[Linkedin](#)



Yohai Rayfeld

Chairman at Pango

[Linkedin](#)

Token Issuance

NKR Token

To finance the **NKOR** ecosystem, 200 millions issued tokens (**NKR**) will be in total supply and 40 millions will be offered in a sale event. The **NKR** token price will be a fixed price (in ETH), and the distributed **NKR** tokens will constitute the total amount of available liquidity. The tokens will be used to finance the further development of the **NKOR** ecosystem and its ongoing operations, as well as to attract additional strategic partners to the **NKOR** platform to further its expansion.

Tokens Allocation

- 29% Company & Future Cooperations, Affiliations (uniform 12-month vesting schedule, with 25% of total vested upon the lapse of each quarter)
- 20% Miners
- 20% TGE Sale
- 15% Bounty / Community
- 12% Team (uniform 12-month vesting schedule, with 25% of total vested upon the lapse of each quarter)
- 4% Advisors / Consultants (uniform 12-month vesting schedule, with 25% of total vested upon the lapse of each quarter)



Financial Projection and Funds Distribution

NKOR's groundbreaking technology for processing data will be implemented on blockchain. The funds raised in the TGE will allow us to build the technology and achieve our milestones.

At first stage, our main focus will be on building a product that will be able to be marketed and be used by the NKR holders. In addition, we will have to put special attention on expanding our exposure, this will be done by marketing resources along with creating professional cooperation with the relevant community.

In addition, we will need to invest amounts in establishing the business and setting up the grounds for the operation.

The expected distribution of the funds will be:

- 50% Research and Development
- 25% Marketing
- 15% Corporate, Legal and Infrastructure
- 10% Community Development



Our main focus is to create immediate value to all NKR holders and provide them with the most advanced product there is along with increasing the user base in order to allow the users to have a vibrant eco-system with real value.

Additional Considerations

Risk Factors

The risks factors relating to the business model and to the Token Sale event are as follows:

- NKOR might not reach the target sale amount, which might affect the execution of the planned roadmap.
- The NKR token might be influenced and depreciate in value due to external events.
- Unforeseen regulation might limit the use of the NKR token (either locally or globally).
- NKOR required complex development of software and algorithms, the development of which might be delayed due to unforeseen barriers.
- Digital content distribution, copyright protection and IP management are a lucrative market share that is growing. Competitors might introduce same or better solution that might affect NKOR's market share.
- NKR tokens might come under new taxation laws.
- NKOR may not succeed in driving enough adoption of the NKOR platform by the community.
- The positions and plans described may be modified based on the project's progress.

Legal Considerations, Risks and Disclaimer

IMPORTANT NOTICE: PLEASE READ THE ENTIRETY OF THE “Legal Considerations, Risks and Disclaimer” SECTION CAREFULLY. WE RECOMMEND YOU CONSULT A LEGAL, FINANCIAL, TAX OR OTHER PROFESSIONAL ADVISOR(S) OR EXPERTS FOR FURTHER GUIDANCE PRIOR TO PARTICIPATING IN THE NKOR LIMITED TOKEN SALE OUTLINED IN THIS WHITE PAPER.

Please note that this is a summary of the “Legal Considerations, Risks and Disclaimer” document which can be found in www.nkor.io (the “**Legal Considerations, Risks and Disclaimer**” document) and which you must read in full before: (i) making use of this White Paper and any and all information available on the website(s) of NKOR Limited (the “**Company**”) and/or (ii) participating in the Company’s token sale outlined in this White Paper (the “**Token Sale**”). Any undefined capitalised terms below shall have the meaning set out in the “Legal Considerations, Risks and Disclaimer” document. This summary should not be relied on in place of reading the “Legal Considerations, Risks and Disclaimer” document in full.

The “Legal Considerations, Risks and Disclaimer” document, the full version of which can be found at www.nkor.io applies to this White Paper and any and all information available on the Website. The contents of the “Legal Considerations, Risks and Disclaimer” document outlines the terms and conditions applicable to you in connection with (i) your use of this White Paper and of any and all information available on the Website; and/or (ii) your participation in the Token Sale, in each case in addition to any other terms and conditions that we may publish from time to time relating to this White Paper, the Website and the Token Sale (such terms hereinafter referred to as the “**Terms**”).

The information set forth in the “Legal Considerations, Risks and Disclaimer” document may not be exhaustive and does not imply any elements of a contractual relationship. While we make every reasonable effort to ensure that all information: (i) in this White Paper; and (ii) available on the Website (all the information in the White Paper and all information available on the Website hereinafter referred to as the “**Available Information**”) is accurate and up to date, such material in no way constitutes professional advice.

The Company does not recommend purchasing Tokens for speculative investment purposes. Tokens do not entitle you to any equity, governance, voting or similar right or entitlement in the Company or in any of its affiliated companies. Tokens are sold as digital assets, similar to downloadable software, digital music and the like. The Company does not recommend that you purchase Tokens unless you have prior experience with cryptographic tokens, blockchain-based software and distributed ledger technology and unless you have taken independent professional advice.

All participants that are willing to purchase tokens equal to 10,000 EUR and above will require to be identified by providing to the company a valid passport copy and receive a confirmation from the company.

Citizens, nationals, residents (tax or otherwise) and/or green card holders of each of: (i) the United States of America; (ii) Singapore; (iii) South Korea; (iv) the People's Republic of China; or (v) any other jurisdiction which prohibits the possession, dissemination or communication of the Available Information and/or prohibits participation in the Token Sale or the purchase of Tokens or any such similar activity (collectively the **"Restricted Jurisdictions"**) or any other Restricted Persons are not permitted to participate in the Token Sale. The term "Restricted Persons" refers to any firm, company, partnership, trust, corporation, entity, government, state or agency of a state or any other incorporated or unincorporated body or association, association or partnership (whether or not having separate legal personality) that is established and/or lawfully existing under the laws of a Restricted Jurisdiction (including in the case of United States of America, under the federal laws of the United States of America or under the laws of any of its States). Tokens may not be resold to purchasers who are citizens, nationals, residents (tax or otherwise) and/or green card holders of Restricted Jurisdictions or to Restricted Persons or to purchasers in any other jurisdiction where the purchase of Tokens may be in violation of applicable laws. You are not eligible to purchase any Tokens in the Token Sale if you are a citizen, resident (tax or otherwise) or green card holder of a Restricted Jurisdiction or you are a Restricted Person. You represent and warrant that you are not: (i) a citizen or resident of a geographic area in which access to or use of the Tokens and/or the Services is prohibited by applicable law, decree, regulation, treaty, or administrative act; (ii) a citizen or resident of, or located in, a geographic area that is subject to U.S. or other sovereign country sanctions or embargoes; or (iii) an individual, or an individual employed by or associated with an entity, identified on the U.S. Department of Commerce's Denied Persons or Entity List, the U.S. Department of Treasury's Specially Designated Nationals or Blocked Persons Lists, or the U.S. Department of State's Debarred Parties List. You agree that if your country of residence or other circumstances change such that the above representations are no longer accurate, that you will immediately cease using the Tokens and/or our intended services.

In no event shall the Company or any current or former Company Representatives be liable for the Excluded Liability Matters (as such term is defined in the "Legal Considerations, Risks and Disclaimer" document).

The Company does not make or purport to make, and hereby disclaims, any representation, warranty or undertaking in any form whatsoever to any entity or person, including any representation, warranty or undertaking in relation to the truth, accuracy and completeness of any of the information set out in the Available Information.

You should carefully consider and evaluate each of the risk factors and all other information contained in the Terms before deciding to participate in the Token Sale.

Technical considerations

NKOR aims to provide complete content marketplace functionality with full decentralization. Content markets that are based on advanced analysis algorithms require functionalities such as content storage, content analytics algorithms, search, messaging, and user activity analytics.

NKOR uses existing distributed protocols as the building blocks for the NKOR protocol for content distribution and analysis, which include:

- **Smart contracts** for managing content ownership, providing lottery for computing nodes and taking care of corresponding reputation.
- **IPFS/Filecoin** for content storage. Ideally – FileCoin will be used for content Storage, IPFS for related metadata, and Json schemes for algorithms and weights for neural networks. Filecoin provides a more secure and consistent way of content storage based on their Proof of Replication and Proof Of Spacetime consensus algorithms. IPFS is a decentralized file storage network, operating with no single points of failure, and no dependence on geographic or political territory. Each file on IPFS can be located using a canonical URL. FileCoin will be built on top of the IPFS code.
- **Ethereum.** When the Ethereum network is under low load, its block confirmation time of 20 seconds, which means a participant will wait an average of 10 seconds for each operation. Under a normal workload, transactions may be processed only after a block or two, resulting in a longer waiting period of around one minute. Such latency is not reasonable for UX and requires to facilitate the user experience in a way that will provide immediate feedback for actions while processing the blockchain operations in the background. Ethereum testnets, such as RAIDEN and CASPER, are expected to increase the capacity of the Ethereum network enabling significant reduction of block times and variance in block waits. EOS is another possibility considered to be used in order to improve the system's reaction times.
- **Whisper for real-time peer-to-peer messaging.** NKOR will provide messaging as a part of its social network functionality. Whisper is a part of the Ethereum P2P protocol suite that allows messaging between users via the same network that the blockchain runs on. (Which basically means the messaging will also be developed in a decentralized way)

Disclaimer

This document is for information purposes only, and is not an offer or a call to sell stocks or securities on the NKOR platform, or that of any other related or associated company.

NKR tokens are not securities

User acknowledges, understands, and agrees that NRK are not securities and are not registered with any government entity as a security, and shall not be considered as such. User acknowledges, understands, and agrees that ownership of NKR does not grant the User the right to receive profits, income, or other payments or returns arising from the acquisition, holding, management or disposal of, the exercise of, the redemption of, or the expiry of, any right, interest, title or benefit in the NKOR Platform or any other NKOR property, whole or in part.

Absence of guarantees of income or profit

There is no guarantee that NKR tokens will grow in value. There are no guarantees that the price of NKR will not decrease, including significantly, due to some unforeseen events, or events over which the developers have no control, or because of force majeure circumstances.

Risks associated with Ethereum

NKR tokens will be issued on the Ethereum blockchain. Therefore, any failure or malfunctioning of the Ethereum protocol may lead to the trading network of NKR tokens not working as expected.

Regulatory uncertainty

Blockchain technologies are subject to supervision and control by various regulatory bodies around the world. NKR tokens may fall under one or more requests or actions on their part, including but not limited to restrictions imposed on the use or possession of digital tokens such as NKR tokens, which may slow or limit the functionality or repurchase of NKR tokens in the future.

NKR tokens are not an investment

NKR tokens are not official or legally binding investments of any kind. In case of unforeseen circumstances, the objectives stated in this document may be changed. Despite the fact that we intend to reach all goals described in this document, all persons and parties involved in the purchase of NKR tokens do so at their own risk.

Quantum computers

Technical innovations, like the development of quantum computers, may pose a danger to cryptocurrencies, including NKR tokens.

Risk of losing funds

Funds collected in fundraising are in no way insured. If they are lost or lose their value, there is no private or public insurance representative that buyers can reach out to.

Risks of using new technologies

NKR tokens are a new and relatively untested technology. In addition to the risks mentioned in this document, there are certain additional risks that the team of the NKOR platform cannot foresee. These risks may manifest themselves in other forms of risk than those specified herein.

Crowdfunding

The NKOR platform disclaims any and all responsibility or liability in relation to any obligations made by creators of crowdfunding campaigns to investors who bought their tokens on the NKOR.io. The platform is just an intermediary between creators of such campaigns and their investors. The function of the NKOR platform is only to transfer funds from investors to creators, and tokens of crowdfunding campaign creators to investors. NKOR does not guarantee the claims made by campaign creators.

Integration

This Agreement constitutes the entire agreement between the parties with respect to the subject matter of this Contract. All previous agreements, discussions, presentations, warranties, and conditions are combined in this document. There are no warranties, representations, conditions, or agreements, express or implied, between the parties, except those explicitly stated in this Agreement. This Agreement may be changed or amended only by a written document duly executed by the parties.