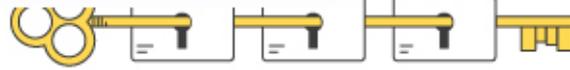




Creativechain

Whitepaper





The blockchain of the creative world

Creativechain

Decentralized platform for the registration and distribution of content that certifies the authorship and license of any digital creation making them indelible.

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23/02/2017

ABSTRACT:

This document describes a platform that applies the blockchain technology to create a complete autonomous and decentralized system of registration and distribution of contents, to indelibly certify the intellectual property and the license of any digital content. The result is an ecosystem of functions supported by smart contracts. This way, creative communities can be liberated and empowered juridically and economically at the same time that the ecosystem eliminates from the equation all the intermediaries that make the processes of creation and cultural distribution more expensive.

1 INTRODUCTION

Digital content distribution media rarely innovate primarily because they are benefited with their classic business model. An example of this is the controversial copyright laws, which some states have reformulated (under pressure from copyright management entities) to protect the interests of an industry that does not seem to understand the nature of the internet. The result is a series of tensions where the interests of traditional industry collide with the right to information and access to culture. As a reflection of this malaise in the last decades numerous "free software", "open source" or "copyleft" movements have emerged. All of them use copyright as a means to subvert the restrictions traditionally imposed by the copyright industry on the distribution and development of knowledge.

The recent irruption of blockchain technology gives many possibilities for the registration and distribution of intellectual property without intermediaries. The power of attorney along with the decentralized distribution of digital P2P content articulate a new paradigm shift in the era of digital culture.

This paper focuses on how Creativechain uses blockchain technology and smart contracts to challenge the centralized power of traditional copyright management entities systems. It offers a public and transparent alternative of intellectual property registration and an innovative ecosystem in the field of peer-to-peer content distribution that frees creators from the centralized intermediation power of traditional digital content industries.

2 DESCRIPTION

Creativechain is a decentralized platform for the registration and distribution of content that certifies the authorship and license of any work or creation making them indelible.

A tool for the empowerment of artists and all kinds of creative people who produce, share and distribute digital content.

The platform applies the power of attorney of the revolutionary Blockchain technology in the process of registering content to create incorruptible time stamps that certify the intellectual property of any digital work.

Creativechain incorporates all the advantages derived from the innovation of crypto coins. In this way, without the need to use bank accounts, purchases, micropayments or donations can be made to the authors of the registered contents.

For the platform, creative chains are the ability of art and culture to interweave any kind of intellectual creation. When it is decided to use a copyleft licensed image to complete a new work of art, an invisible link is created that unites these two works forever. In that sense, the platform has been designed to strengthen the relationships that are generated in the processes of collective creation, therefore, any payment or donation can be chained to reward with a percentage to all the authors that are aligned in a creative chain.

When someone makes a payment to a work, a percentage is distributed to the entire chain of works that follow. In this way the payment or donation is extended in an "automagic" way to

all the derivative works that have participated giving away part of its content.

If the innovative blockchain technology is used in Bitcoin to certify monetary transactions, in Creativechain it is used to certify content registrations (distribution licenses, smart contracts, metadata or files). This technological adaptation makes it possible for the first time in history to create a content distribution system that is decentralized, public, transparent, traceable, incorruptible and free code.

Creativechain is a bet for the public benefit of free culture and common creation as a collaborative method of growing and guaranteeing the right to culture.

3 CHARACTERISTICS

3.1 Registration of intellectual property

Problem: Any digital content is very easy to copy and distribute. This feature often makes it very difficult to prove the authenticity, authorship or distribution license of any original creation. Currently even if a certain work is announced, tagged or linked with a Creative Commons license does not mean that it is sealed under a power of attorney. In a rights dispute this can be an inconvenience to the author when it comes to demonstrating his authorship.

Solution: Creativechain uses blockchain technology and its power of attorney to solve this problem by creating an incorruptible and inalterable time stamp that allows to certify the authorship and license of use or distribution of any work or digital creation. In this way the platform becomes a kind of book of public records that can be consulted and verified by anyone at all times. Texts, images, videos, songs ... can be protected allowing the original creator to be recognized in the event of a conflict of license infringement by a third party.

3.2 Notary registration of licenses

Problem: Since the creation of Creative Commons licenses in 2002 to date, the use of these licenses in works has grown to more than 1100 million in 2015. This increase makes many creators receive situations of non-compliance of their license by third parties or companies. Almost always these conflicts end up being forgotten by the independent author. The most common causes that push the author to not complain usually is not being able to demonstrate the authorship of their work, the legal ignorance or the lack of money to pay the legal costs that would entail claiming their rights.

Solution: Creativechain offers a very simple and economical solution to empower the authors when claiming their rights. On the one hand the platform issues a digital certificate of authenticity that can be sent to the company that is infringing the rights.

At the same time, the platform incorporates an open channel of direct legal advice with specialized copyright lawyers who will be able to guide and manage online the procedures to claim their rights.

The nature of the copyright culture creates a gap in cultural participation.

At Creativechain we understand that all people have the right to participate in cultural life and enjoy its benefits. That is why we encourage, protect and give priority to the use of free licenses as a means of helping to reduce the cultural participation gap and facilitate the construction of a free culture necessary for the exercise of the right of access to the culture of all societies.

3.3 Smart contracts

Problem: Traditional methods of transferring copyright are often processes that generate an economic and temporary cost for all parties involved.

Solution: Creativechain registers content with a system that is capable of issuing "smart contracts" to make work assignment agreements. A smart contract acts as an informatic program that facilitates, secures, enforces and executes agreements between individuals and organizations. These contracts are signed cryptographically between the parties and are intended to provide greater security than traditional contract law and reduce transaction costs along the process of contracting. Creativechain's smart contracts mean a huge saving of time and money for artists, producers, institutions, organizations or galleries working in the culture sector.

Contracts can be public or encrypted and guarantee that the two parties accept the conditions. With the smart contracts of Creativechain any person can make sure that the purchaser of the assignment of rights has enough money to be unlocked at the time of the signing and registration.

3.4 Transparency and traceability of consumption data.

Problem: Any content distribution companies like Google, Youtube or Amazon privatize statistics and consumption data. This causes technological giants to have a market monopoly, creating consumer trends and manipulating any sale on their platforms. Society is increasingly aware of this power and is unwilling to cede its information to large multinationals that offer free services to convert user information into a privatized and marketable value. In most cases this information is sold to third parties to multiply their value, as happens in the advertising use. In this sense we must remember the famous axiom that says; "When something is free, the product is you."

Solution: In Creativechain, all f interaction and consumption data are public, always respecting author or consumer's choice of identity and anonymity. Only users can decide to reveal their identity to who they want and even publish their information in an encrypted way. In this way, any user can use the network's statistics to improve their content offer on equal terms with other users.

In Creativechain, the content owners are the authors, and they will always be able to prove it with the records that have been registered in the blockchain.

3.5 Distribution of TFS files in network Torrent

Problem: Currently digital content distribution companies use private servers where all content is centralized. In this way the content that we upload remains opaque in the hands of intermediaries and their private interests, being able to be manipulated by the lack of transparency. Usually they censure or eliminate contents without prior notice. In most cases, these intermediaries acquire the right to include in both their terms and conditions of use the ownership of the digital archive and the right to exploit it.

Solution: The complete decentralization of all the metadata in a blockchain is the solution to fight against the accumulation of power that some content distribution companies have.

Tarsius File System (TFS) has been developed to provide a solution to the unlimited storage and temporary perpetuity. TFS allows file storage while guarantees the availability of data with 10 copies. The number of copies can be configured by

the blockchain system consensus. TFS encrypts the documents and uses the Torrent network as a parasite that ensures the stable permanence of all registered files.

Although it is always recommended to the user to have the original file as a proof, in case of legal dispute the TFS system works as a backup to rescue the original file while it acts as a method of viewing content from the decentralized platform Creativechain.

All metadata records that link to the files are stored in the block chain. This way no one can modify a single record as it would not match the information shared by the other nodes and would not be validated. Thanks to this process, we are able to offer a distributed and public registry system whose consensus resides in the code itself and any modification of the initial source code should be approved by more than 51% of the nodes.

3.6 Creativecoin: the crypto currency of Creative communities.

Problem: In many countries, artists and creators are separated from any funding strategy because of the difficulty of accessing a bank account. At the same time, banks act as intermediaries by imposing fees on transactions that end up making very expensive the final cost of production of any work or creation.

Solution: Creativechain aims to free cultural production from the intermediation of traditional banks and offer new and more inclusive financing services. That is why the platform offers the service of management of collections, payments or donations with Creativecoin, the first cryptocurrency created and designed to meet the needs of all creative communities that produce and distribute digital content. There are many benefits attributed to the use of virtual currencies. A global currency that does not belong to any state or government and can be used around the world without geographical or political barriers. Being foreign to the fiduciary system can not create debt with it and its value does not depend on the intervention of any central bank.

Creativecoin uses up to 8 decimals divisible. This fact facilitates the micropayments to all type of contents. The transactions are made in real time and their execution is completed in a few minutes. The currency is designed to be impossible to falsify, nor can a double expense be made without the network detecting it. The cryptocurrency is anonymous and no one is obliged to reveal its identity. This makes of Creativecoin a perfect currency to register contents anonymously.

All transactions and registrations are transparent and are recorded in an open account book. The use of Creativecoin entails lower costs per transaction than any traditional credit card system or payment gateways such as Paypal. Creativecoin is a peer-to-peer currency and works like cash, with the advantage that it occupies a tiny space so you can save a huge amount on a small file or a USB stick.

This way, Creativechain goes one step beyond copyleft by applying "copyfarleft". This means that the platform not only bets on the defense, protection and distribution of copyleft content, but also gives "fintech" solutions for the economic emancipation of People who produce it.

Creativecoin blockchain has three basic functions: registering content metadata, issuing smart contracts and using a cryptocurrency.

Unlike other currencies, Creativecoin contemplates a basic value that is to register contents.

The fee is 0.001 CREA that is distributed in full to the nodes that have confirmed the transactions.

3.7 Peer to Peer Content Distribution

The Creativechain platform adapts to the multiple needs of digital content creators by facilitating various P2P distribution methods for their works.

3.7.1 Creative Commons & Copyleft

It allows to view and download for free, as long as the creator is respected according to the Creative Commons Attribution license. In order to encourage the use of free licenses, the platform rewards with Creativecoin the works licensed with CC that have obtained a better evaluation by the community.

The author can introduce a work with copyright license and set a total price for his work.

Once the money has been obtained thanks to the donations or micropayments of other users, the intelligent contract unlocks the work and issues a new copyleft license that liberates the work for the whole community.

3.7.2 Royalty Free

Purchase and sale of Royalty-Free licenses for unlimited use on any project and forever. Purchases directly support the creator of the work.

3.7.3 Equity Crowdfunding

The creator of the work offers a percentage of participation for investors. This way the benefits of distribution of the work are distributed automatically among all the microinvestors.

3.7.4 Donations

The platform allows to make donations in Bitcoin and Creativecoin for all the works registered in Creativechain's blockchain.

3.7.5 Limited Edition

Creators can distribute their creations in limited edition mode. This means that creators can limit the broadcast of a digital artwork and sell a limited number of reproductions that are certified and numbered.

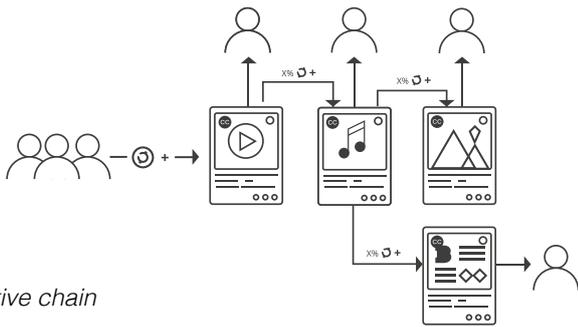
3.8 Creative Chains

We understand "creative chains" as the ability of art and culture to interweave any kind of intellectual creation. When a creator decides to use a copyleft licensed image to complete a new artwork generates an invisible link that links these two works forever.

Thanks to blockchain technology we can now record, trace and visualize in a decentralized public archive all the connections that are generated between any creation.

This system facilitates the chaining of payments to derivative works, giving an innovative solution to the recognition and economic reward of the creative chains.

This characteristic is the one that gives name to the platform and its final objective is to be able to create a map of connections that help us to understand how the cultural transmission is articulated and the creative processes that shape it over time.



Creative chain

3.9 Creation of Dapps

Creativechain is an open source ecosystem that allows other content platforms to create their own decentralized applications that use the Creativecoin blockchain to store and index content. These platforms can be specialized in Art, photography, videos, ebooks, software, music, multimedia banks ... any distribution system is possible.

3.10 Social Network

Creativechain works like any social network where content is displayed or distributed. You can create distribution channels and specific communities where interact with content from other authors, using, rating and commenting on their creations. The system incorporates an encrypted chat so that you can contact privately with the artists and authors of the content.

All interactions between users and contents are registered in blockchain

4. THE COMMUNITY

4.1 Creators

Artists, musicians, designers, writers and audiovisual professionals who produce digital content and use the Internet

to distribute their creations.

4.2 Content Consumers

Users of digital content that seek new ways to access all types of cultural products without intermediaries. Directly Author-consumer or Fan-Artist.

4.3 Institutions

Organizations or institutions committed to the commons that seek a technological way to democratize their digital heritage.

4.4 Companies and content platforms

Audiovisual production companies, social networks or content platforms that publish and distribute digital content from third parties.

4.5 Cultural centers

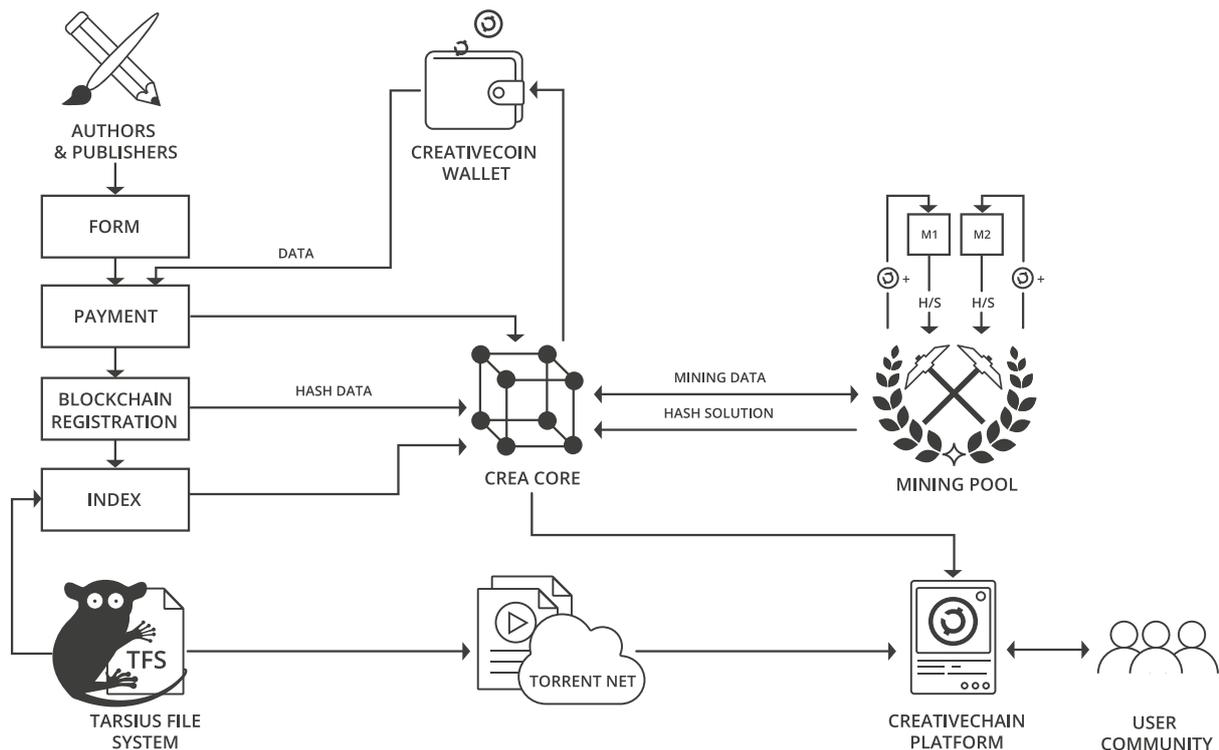
Galleries, museums or cultural centers can implement a sure and economical system of transparency to manage rights of distribution and exploitation of works of art.

4.6 Specialized lawyers

Copyright lawyers seeking new tools to defend the rights of their customers.

5. TECHNICAL DESCRIPTION

Creativechain uses the Blockchain protocol modified and adapted to the needs that are required for a platform of registration and distribution of contents as a greater OPRETURN data allowed.



Flow Creativechain Net

5.1 Specifications Creativecoin:

Currency Name: Creativecoin
 Symbol / Label: CREA
 Total issue of the currency: 115,000,000
 End of coin creation: 91,9 Years
 Hash algorithm: Scrypt
 Work type: Proof-of-Work (POW)
 Block spacing: 2 minutes
 Maximum block size: 4 MB
 Minimum Confirmation: 8 Blocks
 Cycle of difficulty recalculation: 720 blocks
 Data function implementation: Segregated Witness (Segwit)

5.1.1 Currency issue and mining

Creativechain is a multidisciplinary project that unites diverse fields of knowledge, such as art and culture, with the new technologies of communication, computing, encryption, mathematics and economics. From this fortunate crossing is born the motivation to apply the Fibonacci series, (the name of the celebrated mathematician of the Middle Ages, Leonardo of Pisa known as Fibonacci), an ancient mathematical formula that surprisingly manifests itself in many areas of nature and has surprised both Mathematical biologists and artists.

It is already known that in the classical period Greeks used the essence of this sequence, the golden number ϕ (fi) 1.61803 that was applied to the design of their sculptures as well as to the construction of their temples among other manifestations of Greek art.

$$\phi = \frac{1 + \sqrt{5}}{2} = 1.6180339887 \dots$$

The number ϕ is related to the fibonacci sequence being this a midpoint between the numbers describing the sequence.

$$F_{n+1} / F_n$$

The division between the Fibonacci numbers approaches asymptotically to the golden number, for example:

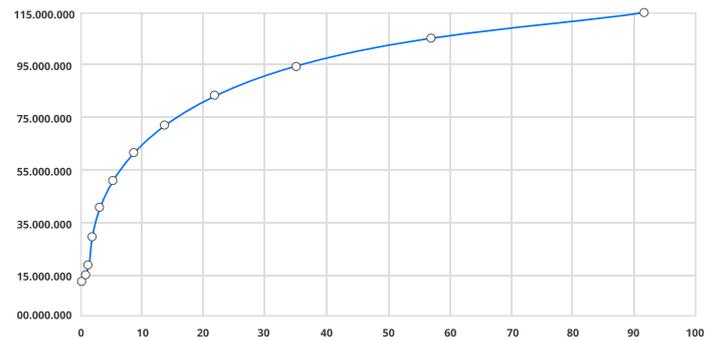
$$34/21 = 1.69047619, 55/34 = 1.67647059, 89/55 = 1.6181818, 144/89 = 1.617977528.$$

The genesis of Creativecoin follows a Fibonacci sequence structure with rewards every 2 minutes with a 2-phase path: The

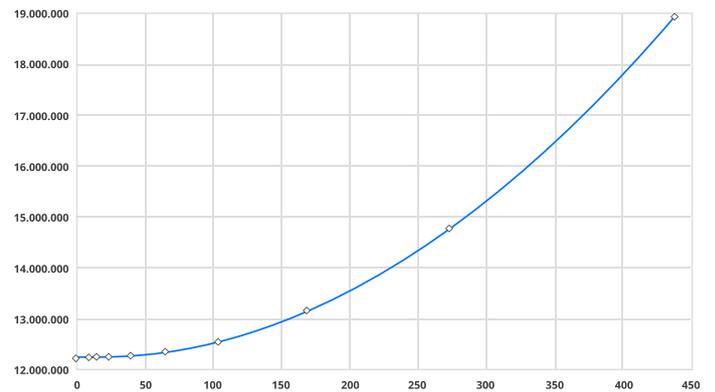
first phase starts in the genesis block 1/1/2/3/5/8/13/21/34/55 Until the block Fibon 514229 (2 years), where it will start the second inverted phase 34/13/8/5/3/2/1 / until reaching block Fibon 24157817 (91.9 years). In the same way the sequence of the blocks that mark the eras is based on the sequence of Fibonacci.

In this way each era has a golden proportionality where each change of era is 1.6 times greater than the previous one.

The objective of adding this sequence to the creation of the coin is to give it proportional and numerical beauty while avoiding the speculative mining that many currencies often suffer during their first years of life.



Overture of Fibon 450 days



Full sumohony of Fibon 91.9

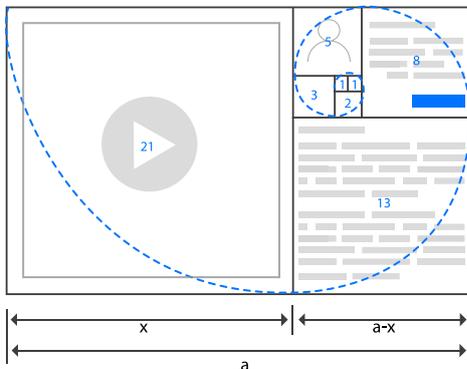
Days-years per Era	Sum Days - Years	Reward Era	Block	CREA/Block	CREA mined per ERA	End CREA	End CREA % of Limit
0,0	0	0	0	0	0	12.226.641	10,63
9	9	1	6.765	1	6.765	12.233.406	10,63
6	15	2	10.946	1	4.181	12.237.587	10,64
9	25	3	17.711	2	13.530	12.251.117	10,65
15	40	4	28.657	3	32.888	12.283.955	10,68
25	64	5	46.368	5	88.555	12.372.510	10,75
40	104	6	75.025	8	229.256	12.601.766	10,95
64	169	7	121.393	13	602.784	13.204.550	11,48
104	273	8	196.418	21	1.575.525	14.780.075	12,85
169	1,2	9	317.811	34	4.127.362	18.907.437	16,44
273	2,0	10	514.229	55	10.800.990	29.710.427	25,83
1,2	3,2	11	832.040	34	10.805.574	40.516.001	33,23
2,0	5,1	12	1.346.269	21	10.798.809	51.314.810	44,62
3,2	8,3	13	2.178.309	13	10.816.520	62.131.330	54,02
5,1	13,4	14	3.524.578	8	10.770.152	72.901.482	63,39
8,3	21,7	15	5.702.887	5	10.891.545	83.793.027	72,86
13,4	35,1	16	9.227.465	3	10.573.734	94.366.761	82,05
21,7	56,8	17	14.930.352	2	11.405.774	105.772.535	91,97
35,1	91,9	18	24.157.817	1	9.227.465	115.000.000	100,00

5.2 Visual CREA

5.2.1 Display standard

From Pythagoras (569 BC) who chose as a logo for his school the pentagonal star, a geometric figure where all parts are related to each other following the proportion of the golden section, there are many cases of artists who have used this proportion in their works of art. Phidias (500 BC) in the designs of the Parthenon or Leonardo da Vinci (1452 AD) in some of his paintings more known as the Gioconda or Vitruvian man are just some of the best known examples. In visual aesthetics the reason for using this ratio is related to the attempt to achieve a pleasant and symmetrical perception of the forms and relationships that are generated between them

Visual CREA is the visual standardization system of JSON data structures, produced by CREA's blockchain. This system is based on standard display rules that use the golden ratio to display data, documents or files on any digital display device.



Visual Crea Sistem

5.2.2 3D Data Navigation

It is the multidimensional visualization system that uses data structures as objetos or arrais with infinite multidimensional positions and possibilities. The data navigation structure in CREA's blockchain consists of 3 Dimensions. Each block of information can scroll through all dimensions depending on the configuration that the user sets according to their search criteria.

Example: The top-down navigation will correspond to the works of the author, left-right works related by keywords and inside- outside correspond to navigation in time by date of registration in the blockchain. This system allows to simply navigate in the public archive by applying the time dimension and thus check the order of registration and sealing over time.

- Example:
- D = Search Hash
- P = Point in space
- Z = Time
- Rdw = Related with hash with who publish
- Rdp = Related with the publish
- p[d] [z] [rdp] [rdw]

5.3 Fair Indexing of Data

Creativechain's philosophy is to develop a content search system in blockchain as fair as possible for all users. For this, each day (range that can be reviewed by the consensus) all the nodes emit the data of interaction statistics and consumption of

the platform.

- Number of requests to each type of content.
- Number of requests to each content.
- Number of searches per text string.
- Number of signatures received by type of signature.
- Traffic and frequency

These 5 indicators give millions of possibilities for each developer to take advantage of information as he pleases and generates the statistics that best suit him to determine trends in the distribution market.

These indicators allow you to create more realistic consumption statistics, since there is no possibility of manipulation by the platform.

In this way and unlike the other centralized platforms like Google or Amazon in Creativechain all the people have the same power of access to the information of the network without generating positions of privileges between users and distributors.

5.4 CREA Rewards Protocol

Part of the funds obtained in the crowsales (8%) are used as a reward for authors who have distributed their work under open licenses. For the fair distribution of these funds an algorithm that values the quality of the content is used crossing all the data of interaction of the network. The consensus of the network can vary and regulate the algorithm indicators.

5.5 Crea ID

Each user can remain anonymous or provide as many proofs about their identity as they want to be consulted by a third party or organization that wants to give him access for any purpose that is required through the use of his public and private keys.

5.6 Smart contracts

The Creativechain platform allows you to incorporate any type of license into a smart contract to seal assignment agreements or to sell and distribute the work in the channels or communities of the platform. Contracts based on methods of distribution that favor collective creation:

Smarts C Commons: Contracts relating to the parties with a Creative Commons license or copyleft

Royalty Free Stock Photography: Contracts based on agreements of purchase and sale of free licenses for unlimited use in any project and forever.

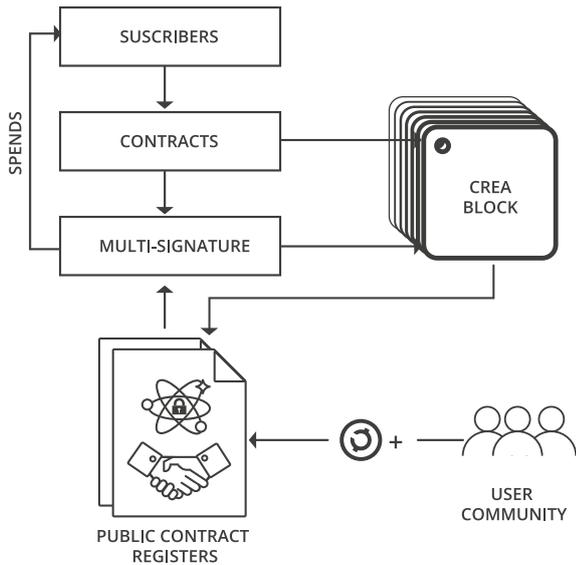
Equity Crowd: Agreements for the distribution of dividends as participation for project investors. In this way the benefits of distribution of the work are distributed automatically among all the microinverters.

Sponsor License: License to sponsor contents of users who have activated this function in their project.

Creative Chain License: License based on a Creative Commons license to string derivative works whose profits are distributed in a chained way with a Percentage X to all mentioned works.

The creator of "smart contracts" that incorporates the platform allows you to design contracts tailored to fit the needs of each cultural sector.

The purchase of works directly supports the creator of the work and its creative chain.

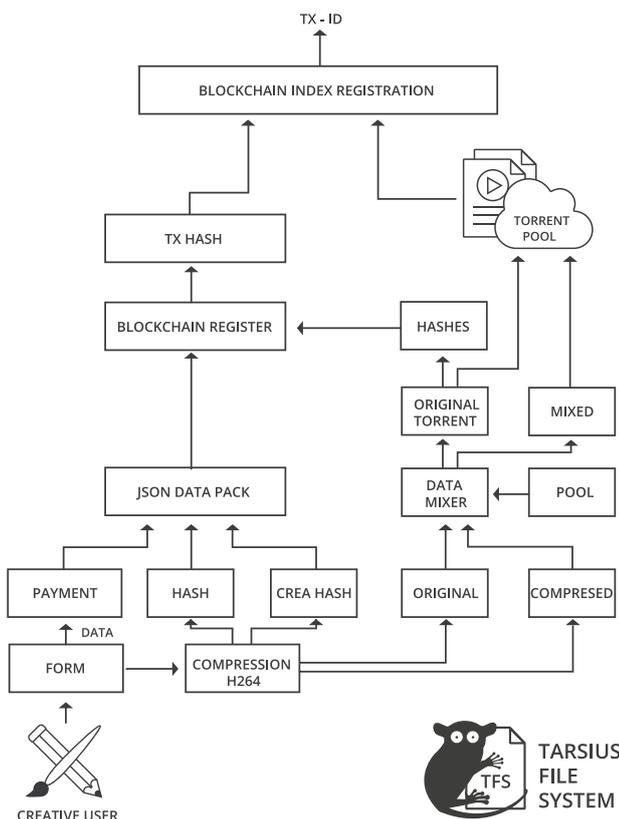


Smart contract model

5.7 Registration Fee

The content registration fee in the Creativecoin blockchain has a fixed price of 0.001 CREA. This price is the same for all contents and goes entirely for the miners of the network. Taking into account that we are talking about a content platform, the volume of records will be one of the largest percentages with respect to the total volume of transactions of the network. This percentage ensures a good reward for the miners which in turn will motivate the increase of nodes and with it a greater security of the network

5.8 TFS files



Tarsius File System (TFS)

6 Conclusion

Thanks to the arrival of Internet 1.0 and the blogosphere, for the first time people had the opportunity to show their creations to millions of people without spending enough money for it. In the case of the music industry, it meant a revolution in which producers or labels ceased to be the essential routes for selling more records. Years later arrived the revolution of Internet 2.0 or also known as the "social networks revolution". The artists had hundreds of platforms where they could show their work, meet their fans, talk to them and exchange knowledge in a bidirectional way.

Soon, the first companies that monopolized and standardized their own methods of content distribution emerged. Private capital companies that work to capitalize on the content uploaded by users and without the least participation in the company by its users. Free platforms like Youtube that were centralized structured controlling all the content and privatizing all the data of consumption and interaction of the users. Now society is becoming more aware of this power and is not willing to cede its information to large multinationals that offer free services to convert the information of the users into a privatized and marketable value. In most cases this information is sold to third parties to multiply their value, as happens in the advertising use.

Naturally now comes a third revolution, the irruption of blockchain technology also known as Internet 3.0. This technology marks a paradigm shift that will affect the foundations of the digital content distribution industries, improving internal project democracy, transparency of data and the sharing of creative communities at a global level.

An important feature of the blockchain is that it allows you to create independent ecosystems that use their own currencies and their own systems to validate relationships between users with the help of smart contracts. This combination has created for the first time in history the possibility of creating projects and Decentralized Autonomous Organization (DAO). This is a great leap that opens the door to a greater democratization of content distribution systems.

Platforms like Creativechain evolve and implement improvements according to the consensus of 51% of the network. This allows the evolution of the project is always subject to the acceptance of its users and their needs.

This compendium of features causes the elimination of all the intermediaries that distort the distribution and the relations between the users of the platform. From a creative perspective these intermediaries exert a power that indirectly represses the creative freedoms of every person that produces digital content.

There is a drive in contemporary societies that is making a transversal change in all spheres of culture. This drive is clearly committed to a more just and decentralized future free of major power centers which will positively affect political, economic and creative freedoms.

7 References

Satoshi Nakamoto. Bitcoin: A peer-to-peer electronic cash system. 2008.
 Litecoin Project <https://github.com/litecoin-project>
 Simone Aliprandi - Creative Commons: a user guide. 2010
 Free Software, Free Society: Selected Essays of Richard M. Stallman 2009
 Estado del procomún 2015: Creativecommons.org
 Creativechain: <https://github.com/creativechain/>

