



CopyrightCoins

The currency of royalties

– White Paper –
May 2018



Abstract

This White Paper presents the cryptocurrency CopyrightCoins: The problems they solve, their uses across all creative industries and their definition as a cryptocurrency within a dedicated, closed ecosystem.

Before you continue

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Terms cheat sheet

Fiat currency:

Traditional currencies linked to governments such as USD or EUR.

CopyrightChains ecosystem:

The CopyrightChains ecosystem is a blockchain ecosystem with a main blockchain “CopyrightChains” and two sub-chains “CopyrightCoins sub-chain” and “CopyrightShare sub-chain”. The ecosystem is developed, administered and commercialised by New Internet Media.

Copyright smart contract:

A copyright smart contract is created upon the registration of a copyright within the CopyrightChains ecosystem. This smart contract defines the owners of the copyright and the commercial rules of validity of that contract, as well as content metadata. It is identified by the CopyrightID.

CopyrightID:

A CopyrightID serves as a uniform identification of a copyright within the CopyrightChains ecosystem. The CopyrightID is the identification of the copyright registration on the blockchain (hash). It is roughly the equivalent to International Securities Identification Number (ISIN) as defined in ISO 6166. For backward compatibility and metadata retrieval from the back catalogues in certain industries such as music, it contains reference to international reference standards (such as ISWC and ISRC in music).

CopyrightShare:

A CopyrightShare is a financial asset representing the share of ownership of a copyright owner on a copyrighted content. CopyrightShares give the owner the right to receive royalties in the form of CopyrightCoins.

CopyrightCoins:

CopyrightCoins are the vehicle for the payment of royalties to owners of CopyrightShares. All royalties in the CopyrightChains ecosystem will be paid in CopyrightCoins. From CopyrightCoins anybody can exchange into any currency of their choice at their convenience, through a cryptocurrency wallet and via a cryptocurrency exchange. CopyrightCoins are not regarded as a security by the Estonian finance inspection and are under governance by IMCA.

The relationship between CopyrightID, CopyrightShares and CopyrightCoins within CopyrightChains:

A CopyrightID is a proof that a legal entity (person or company) have registered an intangible asset (creating a uniquely identifiable reference) representing a copyright or intellectual property right. A CopyrightShare is a non-fungible asset of that CopyrightID (it cannot be replaced by another asset of the same class). CopyrightCoins are fungible assets (they can be



freely exchanged with other CopyrightCoins, assets of the same class) that represent dividend in the form of royalties that a CopyrightShare is entitled to.

The evolution of our global digital community

Creative industries, large and small, including music, photography, gaming and all forms of authorship are reaping the benefits of digital distribution and enjoying the advantage of reaching a global online market. Creators and copyright owners have never had it so good.

Making their content available online has become a simple everyday phenomenon. However, the exponential growth of public access to content has brought with it a massive array of administrative problems. An obvious example is the music streaming business: performance royalty income for recording artists, composers and music publishers has for decades been tracked and analysed by collection societies. In the UK, this was a relatively straightforward task in 2008 when around 15 million performances were processed annually. However, the efficiency of Digital Service Providers (DSPs) will take this number to over 4 trillion by the end of 2018. This is true locally and translates on the global scale, across all content industries.

Such growth has a downside: the systems employed by copyright owners and their collection societies were designed for a competitive territorial copyright environment and simply cannot cope with today's enormous global market without comprehensive technological change.

Creators and their agents, quite correctly, demand accurate and timely payment of royalties for the use of their work. The sad reality is the scale of the current market is simply overwhelming the administrative capability of the collection business. This results in royalties being reduced by intermediaries, inaccurate (or even lost completely) and payments severely delayed by months and sometimes years. Being independent is becoming an emblem for being more in control, and some go to great lengths to challenge the existing system, including lawsuits, creating alternative businesses, and coming together as a community to pressure incumbents.

New Internet Media has developed a new, fast and fair copyright administration ecosystem using blockchain technologies to empower creators and copyright owners to deal direct with DSPs, eliminating costly intermediaries and receive accurate royalty revenues almost the moment they are earned.

CopyrightCoins (CCIM) is the cryptocurrency developed by New Internet Media (NIM), and governed by Internet Media Copyright Association (with NIM a founding partner), to be the currency of choice for users and providers of any online copyright content. This fulfilling our mantra: "More Money Faster".



Case study: the music industry

The global music business alone is \$41bn worth of royalties by 2030, stuck in the mud. This is not news: few incumbents of the very complex industry capture most of the revenue. By starting with this content industry, CopyrightCoins is built with the most difficult problem to solve – making the ecosystem ready to be used seamlessly for all other content.

In 2017, global music has seen its highest growth rates following a 15-year 40% drop in revenue, is now driven by streaming. The global recorded music market grew by 5.9% in 2016, to US\$15.7bn – just above its 1998 (pre-digital) record of \$13.8bn. The US alone achieved double-digit growth for the first time in 2016 at 11.4% with \$7.65bn from \$6.87bn in 2015.

The online music market alone is €6.7bn globally in 2016, with the US accounting for 2/3rd of revenue, but Asia having the largest and faster growing customer base. 112 million users paying streaming subscriptions have driven streaming revenue growth of 60.4% in 2016 - online services income now accounts for 50% of all music revenues for the first time.

It's a promising future for the industry overall, with growth expectations to \$41bn by 2030, driven by streaming which is expected to generate \$34 billion (83%) of total revenue. Based on these numbers, we (see "The ecosystem" section) estimate it will be worth €25 billion by 2020.

But streaming is a malfunctioning system, and other trends reshaping the industry draw a not so promising picture:

- The rise of millennials drives the rise of streaming and the fall of physical album sales
- Consumption is changing to playlists rather than albums, nano-payments and subscriptions rather than purchases
- Becoming an oligopoly: the top 4 Digital Service Providers ("DSPs" Spotify, Deezer, Apple Music and Napster) stream over 75% of worldwide content in 2016
- Bad copies ("covers") and copyright infringement are rampant and impact online music sales

For many, especially independent artists and writers, the game is lost before it's even played. New digital formats were said to have killed the industry while streaming is hailed as its saviour, but streaming has been bad for business so far - an example:

"Artist Matt Farley [reports] revenue around \$20,000 in 2016, down from previous years as his music is increasingly streamed rather than downloaded, which is more lucrative. [...] A six-hour, 200-track Spotify playlist would earn him about a dollar each time it's played in full."

"The Streaming Problem: How Spammers, Superstars, and Tech Giants Gamed the Music Industry" - Adam K. Raymond, Vulture, July 5th, 2017

DSPs have a hard time tracking copyright infringement or users abusing the system. Fake artists and bad copies "steal" revenue from original copyright owners. This is facilitated by the



DSP's wide search criteria, and large user-base. For example, Spotify has over 100 million daily active users and has recently (2016) been tackled for being unable to spot fake artists; Google/YouTube waited for years before shutting down YouTube-MP3, a YouTube content downloader.

Even when it works, it doesn't work: as at 5 July 2017, it takes 291 million individual streams to be #1 on Spotify. The top 250-300 copyright owners (music labels, creators and music publishers) generate 95% of the industry's turnover but any payment of royalties can take up to 3 years to reach them due to the complexities of the copyright relationships, and the way the industry has been built historically. Management of copyrights globally is beyond complexity, and has gotten worse with digital where trillions upon trillions of lines of data are managed by each rights management organisation, locally, on outdated systems.

Clearly, the music industry is not adapted to the online digital business. It's:

- **Complex:** Incorrect, incomplete metadata is shared across all DSPs, rights collection societies and copyright owners, and needs to be reconciled "by hand". Rights management organisations are country-based and need to reconcile records with others. Communication is a nightmare.
- **Inefficient:** Licensing, calculating, reporting and collecting royalties is time consuming and inefficient for modern streaming services. It can take years for owners to receive a cent from their work.
- **Neither accountable nor transparent:** Relationship from stream to payment cannot be audited. There is no clear chain as to whom has taken a piece of royalty revenue on the way from the streaming to the copyright owner.

The result is in frustrated artists and producers, copyright owners that don't get their fair share (and have no way to prove it), man-hours and money lost in paper-trailing transactions and in the resulting copyright infringement cases.



New Internet Media ecosystem

CopyrightCoins are the technological backbone to a greater initiative: Putting trust and fairness back into the all payments for online content. To achieve this feat, CopyrightCoins is managed within a closed ecosystem made of companies with specific purposes and focus, from governance to financial management to representing the interests of specific industries. Each company as a dedicated team and acts independently, with CCIM at its core.

New Internet Media (“NIM”):

New Internet Media is the commercial holding company and administrative hub for the entire ecosystem. It hosts the project’s core team and it is the main cost centre. NIM also owns the intellectual property of the developed software and infrastructure.

NIM is the holder of all content “smart contracts” which is enters into agreement for: A set of rules that define who gets paid which amount under which conditions. This is the future of copyright management. Other companies are responsible for their own agreements.

Internet Media Copyright Association (“IMCA”):

Internet Music Copyright Association’s primary purpose is to provide a stable economic platform for CCIM. Governed by its members (see “Governance” section), it is responsible for building and maintaining a healthy, liquid and stable CCIM market for the benefit of CopyrightCoins owners. As such, IMCA is independent from the other ecosystem companies.

IMCA is the holder of all CCIM wallets (crypto-world proxy for “bank account”) and is the central bank for CCIM: The only body allowed to issue new CCIM to the market. It has the power (see “Governance” section) to issue more CCIM to the public market, therefore managing price inflation to reasonable levels.

As such, it is the owner of all CopyrightCoins, and new purchasers of the crypto-currency have to register at IMCA to open a wallet and in turn purchase CCIM from IMCA.

Funds received directly by IMCA in exchange for new CCIM are used for the development of the technology and the financing of the ecosystem. Other issuers of CCIM (other companies in the ecosystem) may use CCIM as an investment vehicle for their own purposes – in each instance, part of a separate funding cycle for which new communication (including terms & conditions) will be issued on a case-by-case basis.

Note: After CCIM is purchased from IMCA, it can be traded on all approved exchanges and the crypto and fiat currencies managed by those exchanges.

All data is managed on-chain. Each CopyrightCoins owner has a wallet, and each wallet an address (or “bank account number”) on the CopyrightCoins blockchain (see “Technology” section).

IMCA is a not-for-profit association under Estonian law.

Internet Music (“IM”) Ltd.:

Internet Music is a music rights representation and management company representing the commercial interest of all music industry participants, from DSPs to labels, publishers, artists and writers. Its role is to provide a direct service to industry incumbents and eliminate



intermediaries in the music supply chain from creation to end user, with the aim to reduce friction, maximise revenues and provide instant payment of online streaming royalties. IM operates for the benefit of copyright owners and creators, who assign the administration of their online rights to it. IM will give copyright owners and creators the unique opportunity to reimagine the music industry.

To facilitate its services and make them available to a broad user base, and on a custom basis (not all copyright owners need the same level of representation), IM has built Music as a Service (“MaaS”), an online licensing platform for music copyright. It provides DSPs with access to the unique Music as a Service (“MaaS”) platform from which the DSPs request the use of the copyright for streaming. This is an online platform built on top of CCIM and exclusively managed by the music-focused company. In beta testing at the time of writing, it is a simple online licensing platform, streamlining and automating the entire process as well as reporting procedures. Put simply, thanks to our “1 click = 1 licence = 1 payment” framework, the DSPs can just request use for the licence “as a service”. This platform, combined with instant reporting, will offer DSPs with drastically reduced reporting costs, data reconciliation nightmares, and licensing agreement complications.

All data is managed on-chain. Each registration smart contract has an address on the copyright blockchain called “CopyrightID” (see “Technology” for details).

IM is a not-for-profit limited partnership under United Kingdom law.

CCIM Exchange (“CCIME”):

CCIME is the digital clearing house and reporting structure for all CopyrightCoins transactions. It is the link between IMCA and all other on-chain companies in the ecosystem, starting with IM. Therefore, it is the link between each CCIM wallet address and each CopyrightID. With a very small technical team, it clears all transactions as correct within seconds, flags abnormalities in the system, and manages reporting of all on-chain transactions for each of the ecosystem’s companies.

This is a Business to Business (B2B) service for CCIM only: No other crypto or fiat currencies are part of these transactions.

It is a for-profit business, taking a fee on reporting and transactions to be incorporated.

The future of the ecosystem:

NIM team is now in the process of putting the teams together for the other industries which we target. The teams will focus their attention in building the same style of representative bodies for their individual content industries:

- Articles, blogging,
- Photography and visual arts
- Video and filming
- Video game content

The team is also looking into building an online copyright exchange based on smart contracts,



allowing for “shares of copyright” to be traded on the blockchain.

CopyrightCoins

CopyrightCoins (CCIM) and its ecosystem are here to provide more money, faster, to all online copyright owners, without an intermediary. It’s a blockchain-enabled cryptocurrency (for definitions, see appendix) built, managed and controlled within our closed ecosystem, and it cannot be mined publicly.

“CCIM” stands for “CopyrightCoins of Internet Media” (see “The ecosystem” section for details on New Internet Media). As an interesting side-note, it also represents the roman numerals for “1199”:

- “1” relates to creativity and initiative, new beginnings, self-reliance and tenacity, striving towards to achieve success, attainment and happiness
- “9” resonates with service to others, leadership and leading others by positive example, altruism and benevolence, and endings and conclusions

CCIM evolves within a decentralised, secure and immutable ecosystem. Accurate metadata for any piece of content and all related transactions (including readership and payments transactions) are recorded onto a blockchain. Combined with our in-house tokenized nano-payments, it guarantees near-instant payment and drastically reduced management fees. With our distributed ledger technology, single streams are licensed - accurate reporting is automatic.

Regardless of the online content being paid for, the premise is simple:

1 click = 1 licence = 1 payment

So what are the long-term benefits of moving to CopyrightCoins?

As a consumer of online content, purchasing CCIM means supporting the online copyright owners in their long-term development, and to help them reboot their industry via a fair system of exchange. We envision CopyrightCoins ecosystem to be a fundraising platform for the artists of the future.

CCIM will also bring power back into the hands of those who create the content. Any online copyright owner will find use in CCIM not only as the receiving party of any royalty transaction, but also to represent his or her interests at the Internet Media Copyright Association (“IMCA”), the governance body of CopyrightCoins ecosystem. 1 owner of CopyrightCoins = 1 vote within IMCA (see “Governance” section for details).

Any distributor of royalties, such as rights collecting societies, will use CCIM as to represent the interests of its industry's copyright owners, to help them negotiate their fair rate of pay, and allow faster, recorded, immutable and audit-able payments.



All of this at a much reduced cost (and reduced headaches!) as full, instant reporting will be provided to all owners of CCIM. Service providers can also tap directly into the blockchain via our API (see “Technology” section for details).

So what does that mean for the music industry, for example?

As mentioned in the “New Internet Media ecosystem” section, CopyrightCoins is but the technology behind focused efforts within each industry, led by companies built specifically to answer the needs of their incumbents.

Our first company represents music writers, publishers, artists and labels’ interests in the industry, and serves to create a common agreement of all parties based on the CCIM technology.

It provides DSPs with access to the unique Music as a Service (“MaaS”, the music side of NIM’s Content as a Service, “CaaS”) platform from which the DSPs request the use of the copyright for streaming. This is an online platform built on top of CCIM and exclusively managed by the music-focused company. In alpha testing at the time of writing, it is a simple online licensing platform, streamlining and automating the entire process as well as reporting procedures. Put simply, thanks to our “1 click = 1 licence = 1 payment” framework, the DSPs can just request use for the licence “as a service”. This platform, combined with instant reporting, will offer DSPs with drastically reduced reporting costs, data reconciliation nightmares, and licensing agreement complications.

This is also in recognition to the DSPs’ clear advantage in the industry: Scale. CCIM will remove the pain (and needlessness) of licensing and reporting, while putting it back into the hands of copyright owners. DSPs will be able to focus on their core business, improve their margins.

Trust in on its way back into the content industries.



CopyrightCoins: A stable coin

The base value of CopyrightCoins is derived from the value of royalties that flow through the ecosystem. As such the value of CopyrightCoins is backed by the value of royalties and not primarily based upon bid and ask (unlike most cryptocurrencies). It is an asset-backed cryptocurrency, often referred to as a “stable coin”:

“In simple terms, a stablecoin is a “cryptocurrency that has price stable characteristic”s, as defined by 1confirmation founder Nick Tomaino.

They can also be defined as ‘price stable cryptocurrencies’ as stated by [Haseeb Qureshi](#). Typically, most stablecoins are pegged against [a fiat currency], but some implementations intend to move over to a basket of currencies or an index such as the CPI (consumer price index) in time. This is in hopes of having a currency independent of fiat in the near future.

[...] In comparison, stablecoins can potentially serve as the backbone of financial applications on the blockchain, especially considering that some of them are compatible with smart contracts.”

“The rise of stablecoins” by Alex T, [CoinJournal](#) - 8 April 2018

Therefore, a stable token is a cryptographic token that keeps a stable value against a specific index like the price of one Euro. This guarantees a better liquidity as any bid/ask is backed by a commodity (in our case, the amount of royalties, themselves backed by fiat currencies).

Why make CopyrightCoins a stable coin?

Stable cryptocurrencies have been a leading topic of discussion since the birth of blockchain technology. The main consideration is for cryptocurrencies to find their use by the general public in the same way a fiat currency does. The trust that is put into a fiat currency, since they exist, is based on two main aspects: trust that its agreed value of the currency will be enforced by a powerful entity (historically, banks - “trust in the institution”), and trust that the value of the currency today will be more or less the same in the long run (“trust in the market”).

In the New Internet Media ecosystem, trust in the institution lies in IMCA’s governance, driven by copyright owners and CopyrightCoins owners. The ecosystem includes a community of administrators and legal representatives on behalf of the copyright owner(s). We cannot, however, control or facilitate the trust that the owners have in the cryptocurrency exchange services where CCIM is listed. The last element to make trustworth in the NIM ecosystem is the long-term value of CopyrightCoins.



To use the Content as a Service platform, and request to use content under copyright, it is necessary to own CopyrightCoins. As such, CCIM is regarded as an utility token. CCIM is also a proxy for the royalties being paid to copyright owners for use of their content as part of a license. CCIM therefore becomes a currency with a standing store of value.

As any currency, CCIM has a variable price. Risk averse users avoid adopting cryptocurrencies due to historical fluctuations, whilst risky investors hold and trade crypto rather than spend it. In these two cases, no cryptocurrency is used to transfer money, only to speculate. This has led to the price fluctuations that have occurred over the last quarter of 2017 and the start of 2018.

Our clients and partners have interest in using the advanced capabilities of a blockchain-based ecosystem (mostly for faster, accurate and immutable payments) and we believe that the entire ecosystem will benefit from using a stable currency, alleviating the risks associated with foreign exchange fluctuations. This, in turn, makes CopyrightCoins a safer, more predictable investment, store of value, and medium of exchange. We hope that, in the long run, this will help get CopyrightCoins to be broadly used, especially by audiences (DSPs' users).

Therefore, we aim to limit the CopyrightCoins' fluctuations against other currencies whilst not technically tying it to any fixed exchange rate (we do not "peg" the coin to any fiat currency or basket of currencies). Instead, the value of CCIM is mainly derived from the more traditional asset of royalties paid for content under copyright.

Long-term CopyrightCoins price stabilization vis-a-vis other currencies:

Stability in an asset class, such as a currency, also comes from its use by a great number of users. It's about liquidity, which is driven by volume and velocity.

Our ecosystem is built to be used by a large number of participants, from institutions to individual users and copyright owners, hence creating volume. Music is one of the best examples of how a multitude of market participants find use in a single, common medium:

- Royalties paid for the artists/band role in music (recording)
- Royalties paid for the songwriter(s) role in music (musical works)
- Royalties paid for a video/film streamed online (potentially many Copyright Owners)

When we go beyond music and look at our other industries, many more cases arise:

- Royalties paid for a journalist authoring an article
- Royalties paid for a photographer illustration an article with a picture
- CCIM bought by a DSP (Digital Service Provider) to license online content

And the list goes on.

The properties of the blockchain we have built allow for high velocity, starting with transferability (the ability to transfer the asset). Again taking music as an example: Today's transfer time of royalties in the industry can, in some cases, take up to 3 years after the original listening timestamp. Moreover, it goes through so many intermediaries that the payout is usually very small compared to the royalties collected - and in some cases, it can be very



inaccurate (number and complexity of existing intermediaries). In comparison, CCIM have a much higher transferability ratio of an average of 3 minutes on-chain transfers, combined with much reduced low fees, security, and simplicity. In addition, the velocity of the asset is improved by disintermediation as the royalty is paid directly from the wallet of the DSP to the wallet of the Copyright Owner. Within the NIM ecosystem, the timeframe from licensing to payment in the wallet of the copyright owner has improved over 500,000%.

Bringing these two concepts one level up, we see that the ecosystem is built for liquidity (the ability to trade the asset quickly). For reference, note that real estate investments are considered very illiquid, whereas cash investments (simple savings account at your bank) are considered most liquid. Liquidity is driven by the willingness of market participants to purchase the asset and by others to sell it.

Calculating the amount of royalties a piece of content will generate:

The value of a piece of content under copyright is derived from its popularity: a popular piece of content will generate more royalties than another, less popular piece of content (regardless of its length, for example). In the case of music, if the song is part of a back catalogue (i.e. older than 18 months), sufficient data is available to under the amount of royalties it has generated and, therefore, has the potential to generate in the future. The older the music, the more data is available to estimate the future amount of royalties. In the case of new releases (< 3 years), the base formula is the total amount of royalties generated in the first year, henceforth reduced by 15% each following year. A formula is coded into a smart contract at registration of the copyright which sets the rule as to how many CopyrightCoins each copyright is worth.



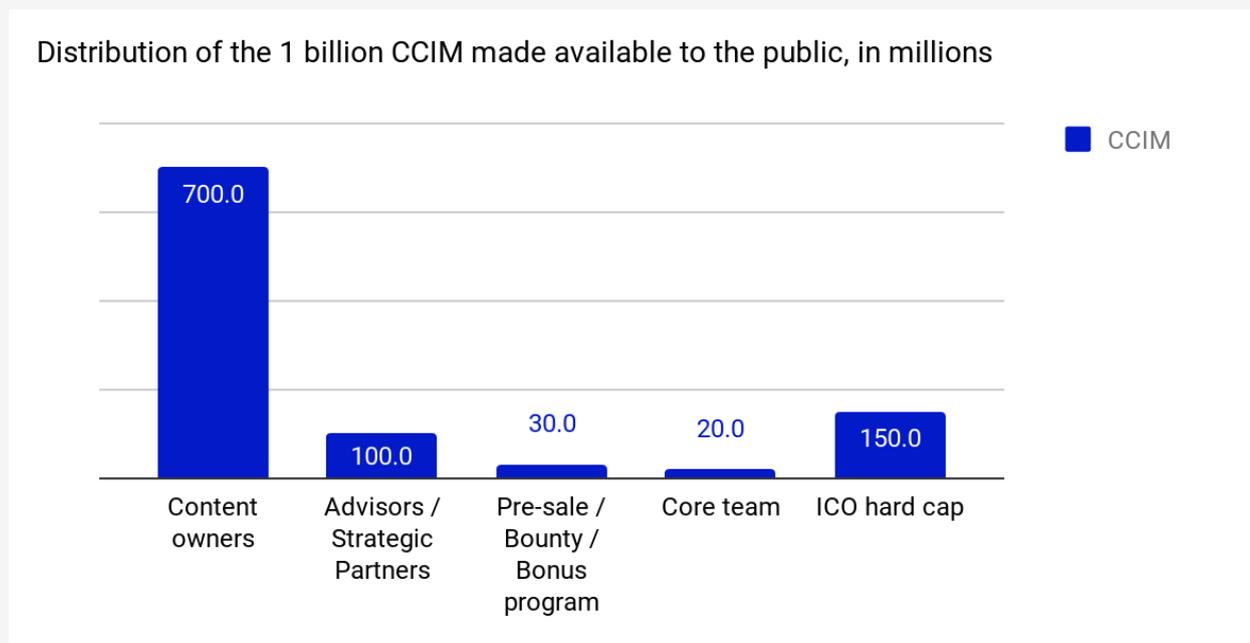
Structure of the CopyrightCoins ICO

A total of 25 billion CCIM have been created, as per the estimation of the New Internet Mediagroup of a market worth of €25 billion by 2020. From those 25 billion CCIM, 1 billion CCIM are initially made public. The remaining 24 billion are under escrow at Internet Media Copyright Association (IMCA). The governance of this escrow account (including release of additional CCIM to the market) is managed by CCIM owners via a voting system. [More details are available on IMCA's website.](#)

The 1 billion CCIM made publicly available have two main users: copyright owners and the general public. 700 million CCIM have been ring-fenced for advances made to copyright owners, which they can convert to Fiat on exchanges (by selling to the market) as they see fit. The remaining 300 million CCIM are made available in four ways:

- Sold as part of the ICO pre-sale (30 million CCIM) - unsold coins are ring-fenced for the bounty and bonus program
- Sold as part of the ICO (150 million CCIM)
- Exchanged for services from Advisors/strategic partners (100 million CCIM)
- Exchanged for services from the core team (20 million CCIM)

At the ICO, CCIM will be sold to the general public at the price of 1 Euro per CCIM. Until then, the pre-sale is open with discount ([see today's discount on the CopyrightCoins website](#)). Note that early supporters, including the core team, pre-sale investors and advisors, have benefited from a gradual discount of CCIM to the Euro starting at 99% (where 1 CCIM = 0.01 Euro).





Technology: Definitions

The CopyrightChains:

The CopyrightChains is the technological backbone of CCIM ecosystem. It is our in-house and secure distributed ledger technology, built on a trusted network operated and administered by NIM. The CopyrightChains is the root blockchain to the CopyrightCoins and CopyrightShares sub-chains, “forks” from the Waves blockchain technology with some additional features. Those two sub-chain are mutually dependent - starting with the registration of a copyright ownership.

The blockchain technology behind the CopyrightChains is different from many other blockchain based technology development in a major way: scalable and throughput. The CopyrightChains can support up to 6,000 transactions per minute — an order of magnitude more than other major blockchains.

The CopyrightChains works through tokenization, creating the possibility of nano transactions in copyright licensing and copyright shares exchange. Upon registration, the copyright is fully digitised with its provenance immutably secured, and tokenized - hence creating CopyrightShare as well as CopyrightCoins. As a result, the work of creators is financially appreciated because licensing payment to owners (royalties) is based upon confirmed ownership that can be instantly transferable and tradeable. The CopyrightChains allows for tokenized licensing and acts as a digital clearinghouse for copyright, with unique metadata:

- It hosts the copyright smart contracts, identified by the CopyrightID, which include the CCIM fee asked by the owners of the copyright for the use of their content, as well as their name, address, and all other relevant metadata for that particular piece of content
- It hosts all changes to the contract on any of these data points
- It hosts the rule of licensing and payment of royalties for each individual copyright
- Each owner (or part owner) of the copyright is assigned a number of CopyrightShares based on the individual’s agreed ownership of the copyright
- Each copyright (Intellectual Property Right) is identified by a CopyrightID created upon registration (see “CopyrightID” below)

It helps simplify and clarify business and licensing relationships:

- Copyright release for a CopyrightID takes place within each industry-representing body’s platform (from NIM’s Content as a Service)
- Copyright can be accessed by any DSP through Content as a Service (“CaaS”) derivatives such as Music as a Service for the music industry
- All transactions are time-stamped, immutable, secure and verifiable

As such, the CopyrightChains is accessible by all industry-representing body within the CCIM ecosystem.

CopyrightChains uses a transaction structure optimized for use with smart contracts, user-defined assets, and transactions with multiple inputs and outputs. It is the best choice for achieving enterprise-grade throughput, scalability, and privacy. The CopyrightChains model



lends itself to massive parallelization and transaction processing. It is also the data model required by best-in-class privacy solutions.

The CopyrightShares sub-chain:

The CopyrightShares sub-chain is a private permissioned chain and is designed in a way that only proven copyright owners have permission to write and transact on the chain. The CopyrightShares sub-chain is a consortium blockchain with access to read-only parts of the sub-chain through a well-defined API (Application Programming Interface) that allows DSPs to get cryptographic proofs as part of the licensing process.

New Internet Media will self-regulate the registration and trading of CopyrightShares since they are not publicly traded.

The CopyrightShares sub-chain opens the future possibility for the “sale” or trading of shares and of a reward-based crowdfunding platform. An example is an artist/band that needs studio time, producers, studio musicians and video crew and offer 30% of the CopyrightShares to the fans in a reward-based Crowdfunding to pay for recording, marketing and release.

The CopyrightCoins sub-chain:

The CopyrightCoins sub-chain is similar to the CopyrightShares sub-chain in that it is a private permissioned chain. However, where the CopyrightShares sub-chain is designed to only let proven copyright owners write and transact on the sub-chain, the CopyrightCoins sub-chain’s sole purpose is to record ownership of CopyrightCoins (not copyright) within a wallet, and changes thereof. It is open to everybody that owns CopyrightCoins through a public multicurrency wallet.

The primary function of the CopyrightCoins sub-chain is to provide a transport vehicle through which the DSP pays the copyright owners their royalty in accordance to the copyright shares registered on the CopyrightShares sub-chain.

It hosts the following information:

- Upon registration of a new user, a CCIM wallet is created and assigned a CCIM wallet ID: Each CCIM wallet is identified by an address (just like an IBAN for a bank account, but on the blockchain)
- Each wallet has the details of the user, for Know Your Customer (“KYC”) and Anti Money Laundering (“AML”) purposes; which include but are not limited to: First and last name, age, nationality, physical address, passport / ID
- The amount of CCIM within a wallet at any given time, as well as the record of all transactions to and from each wallet

The CCIM chain also holds the record of all publicly available supply of CCIM, as well as the record of the CCIM available within IMCA (its central bank) and not accessible publicly (as under escrow) – see “Governance” section for details.



As such, the CCIM chain is entirely managed and only accessible by IMCA, CCIME and approved exchanges.

Registration, release and licensing:

To make sure that all royalties are paid to the correct owners of the copyright, three processes must be in place: registration, release and licensing. These are processed through smart contracts.

Copyright registration places on record a verifiable account of the date and content of the work in question, so that in the event of a legal claim, or case of infringement or plagiarism, the copyright owner can produce an indisputable copy of the work from a reliable source. With the registration of copyright, a unique CopyrightID is created with an initial number of shares and an immutable date and time stamp - via API call. Each share is allocated to a shareholder that are part of the creative effort and entitled to royalty payments accordingly - the result of a smart contract. This registration can be compared to a Central Securities Depository (CSD) where all Safekeeping Securities are kept in dematerialized form. Other traditional CSD tasks as listing of new issues in the market which includes the issue of CopyrightID (loosely compared to ISIN).

Releasing the content is simply making it available for licensing by DSPs. The CopyrightID is the unique identifier any DSP (Spotify, Netflix, Financial Times etc.) relates to. CopyrightID is always used in any licensing request from a DSP upon which a royalty payment in CopyrightCoins are divided among registered CopyrightShare holders according to the copyright smart contract.

CopyrightCoins (“CCIM”):

Outside of the CCIM ecosystem, CCIM is a trade-able cryptocurrency on any authorised exchange, and to any other crypto or fiat currency managed by these exchanges. However, the first issuer of CCIM is IMCA.

Within the ecosystem, CCIM is the cryptocurrency used to pay owners of CopyrightShare: CopyrightShares are allocated at the time of registration according to agreed percentage owned by each interested party (see “CopyrightChains” above). CopyrightShares are proof of copyright ownership.

Per our framework, 1 click = 1 license = 1 payment, in CCIM.

In the future, CCIM will be the cryptocurrency of all copyrighted digital content:

- CCIM will be used to pay royalties for all online digital content
- CCIM will be used to purchase or sell CopyrightShares to other users, across industries and/or to the general public
- CCIM will be used by copyright owners to raise funds for any new creative work



As such, it will be in the interest of all parties within and outside the ecosystem CCIM is traded publicly, and that its value increases over time.

One CCIM is composed of 100 million “Thorbits” (equivalent of the “cent” for the Euro), allowing for nano-payments for each click.

Technology: Processes

Interface to other systems:

With the aim of working with incumbents within each industry, and to be able to scale sufficiently and to be able to take advantage to the best of blockchain, CopyrightChains supports the Interledger protocol and as such are able to run a subset of smart contracts expressible using Crypto-Conditions. Crypto-conditions are part of the Interledger Protocol and provide additional security.

Registering a copyright on the CopyrightChains:

The purpose of copyright registration is to record a verifiable datestamp and details of the digital content in question, so that in the event of a legal claim, or case of infringement or plagiarism, the copyright owner can produce an undisputable copy of the work from a reliable source. In our ecosystem, this is also the creation of a smart contract, allowing the automated payment of royalties to their rightful owners, in a matter of minutes.

For music, two types of copyright are concerned (hence the complexity of this industry):

- [The traditional © symbol](#) for “copyrighted content” applies to the composition, musical score, lyrics, as well as any artwork or cover designs, as all of these are individually subject to copyright in their own rights
- The second type of copyright is [the ® symbol](#), which applies to the sound recording itself

Copyright law recognises the problematic nature of covers (especially for content not under copyright © anymore) which is unique to sound recordings, and gives sound recordings distinct protection in their own right that is separate from that in the underlying work.

Our ecosystem can only accommodate online copyrighted content due to its digital nature, and does not include live performances, printed material, or any other means of traditional distribution of copyrighted content. The raw content metadata is never stored within our ecosystem but rather kept securely in the providers existing data storage infrastructure.

To register content, copyright owners (or their legal representation) access the dedicated platform (such as Music as a Service, or “Maas” for Music) and enter all required content asked by the system, which will depend on the type of content. This first registration creates a



unique time-stamp as the basis for evidence of ownership and is registered on the CopyrightChains.

Copyright release:

After the copyright smart contract is registered, it will be released within the dedicated licensing platform (see “Platforms” section below). This process will depend on the type of content and the consortium reached within each industry-representative company in the CCIM ecosystem.

Reporting on the CopyrightChains and CCIM chain:

From CopyRightID and wallet address to transaction references as well as KYC/AML (“Know Your Customer”/“Anti-money Laundering”) data, CopyrightChains is designed to support a vast array of metadata and to support selective disclosure of any information. This is accomplished with three complementary techniques: one-time-use addresses, zero knowledge proofs, and encrypted metadata.

A one-time-use address is created each time a wallet or CopyrightID owner wishes to receive assets. These differing addresses prevent other observers of the CopyrightChains to identify transactions with a particular party.

To conceal the contents of a transaction, CopyrightChains is incorporating a technique known as “zero knowledge proofs” which cryptographically conceals the assets and amounts in a transaction, while allowing the entire network to validate the integrity of the contents. Only the counter-parties (and those granted access) can view the details of the transaction.

Finally, transaction metadata can be encrypted with traditional KPI, to conceal details from all but the relevant parties.

Whether it's plain text, encrypted data, or hashed proofs, every part of the transaction structure can be annotated with an auditable record of relevant details.



Technology: Platforms

As mentioned in previous sections, CCIM is but the technological backbone to solving the complex problems in the payment of royalties for copyrighted digital content. In the effort of the CCIM ecosystem and team to harmonize industries around a common set of rules and agreed procedures, each industry-representative body within the ecosystem (such as Internet Music Ltd. for the music industry) utilizes its own platform on top of the “raw” CopyrightChains.

We have started with the two platforms below to help us set the groundwork in building the future of the music industry. From there, we can easily adapt the platforms for the next content industry that is ready.

Music as a Service (“Maas”):

Currently in Alpha testing and soon to be release as scalable Proof of Concept (POC), MaaS is a cloud service for music copyright (works and recording – see “Technology: Processes” section above) registration and licensing. MaaS removes the need for a DSP (like Spotify or Apple Music) to ingest music/content into their own storage centres, and to make clear the relationship between copyright owners, licensing agreements and users of the licence. This eliminates the expense of hardware acquisition, provisioning and maintenance, music licensing and ingestion, as well as reporting and litigation nightmares for all parties.

Other benefits of the MaaS model include:

- **Flexible payments:** Rather than purchasing a digital copyright package for a set period of time, the DSPs subscribe to a MaaS license and pay-per-use, under our 1 click = 1 licence = 1 payment (using the CopyrightChains tokenized nano-payment facilities). Transitioning costs to a recurring operating expense allows DSP to exercise better and more predictable budgeting. DSPs can also terminate MaaS offerings at any time to stop those recurring costs, which give more companies access to music offerings without enormous up-front payments.
- **Scalable usage:** Cloud services like MaaS offer high scalability. Amazon Web Services is a great example of such scalability.
- **Automatic updates:** Rather than handling ingestion of new music/content, DSP can rely on a MaaS to automatically update the music offering with the latest releases (content and technology). This further reduces the need for in-house staff.
- **Accessibility and persistence:** Since content is delivered over the Internet, end-users can access the music from any Internet-enabled device and location through DSP (acting as a white label solution) and under the DSPs own brand. Internet Music Ltd. and CCIM are completely invisible to the end user, unless of course the DSP wants the user to their own subscription pay in CCIM.
- **Reporting and payments:** CCIME takes most of the extremely resource demanding processes of reporting and payments away from the DSP.



Governance

CCIM are exclusively managed and governed by IMCA. Its mission is to support and coordinate the efforts of the CopyrightCoins community by helping to create greater awareness of the benefits of the CopyrightCoins in the payment of royalties for copyrighted online content.

Providing more money, faster for Copyright owners and at same time creating Content as a Service (CaaS) for the Digital Service Providers (DSPs or retailers) that provide the consumer-facing proposition for music, videos, articles, pictures, design, User Generated Content, gaming etc.

Governance mechanisms for CopyrightCoins:

Implementing a governance mechanisms for CopyrightCoins will contribute to “controlling” the spontaneous, uncoordinated and unpredictable interaction of users and other stakeholders. Our goal is to produce a greater degree of order in the ecosystem and therefore strengthening regularity and stability of the CopyrightCoins itself.

Informal power structures:

The designation of IMCA governance procedures will aim to break up any informal power structures that might be growing in the ecosystem always with the goal of distribute influence in a fair and transparent way.

External governance:

CopyrightCoins is not a company or a legal entity but a financial infrastructure fueled by the CopyrightChains with CopyrightShares (or tokens) representing real value in the flow of royalties. Even though it's difficult to exert undue influence on a financial infrastructure, external governance will make that impossible under the law. IMCA has as a goal that all future registrations and trading of Copyrights will be regulated in the same way a stock market regulates companies and their shareholders.

Internal governance:

Internal governance gives a voice to owners of CopyrightCoins and serve as a basis for community referendum on fundamental matters pertaining to CopyrightCoins.

Governance system by the law:

A governance system by the law (self-imposed and otherwise) can prevent owners of CopyrightCoins from lobbying effectively for an impromptu and by majority governance system. IMCA will not accept large pools of CopyrightCoins owners (as seen in bitcoin where pools of miners have had large ownership and often try to influence on major decisions) to change the laws of Governance.

**CCIM owner protection:**

IMCA governance rules wishes to make a shift in focus from currency regulation to owner protection, with the objective to be the best on “investor protection” best practices. It is a clear and present goal of IMCA that suitable measures of investor protection must be implemented to safeguard the interests of CopyrightCoins owners.

Proxy investors/owners and advisors:

Due to the simplicity of “voting practices” in the IMCA ecosystem there will be no differences between owners of CopyrightCoins and their advisers (as in artist and their agents). The ultimate responsibility lies with the receiver of CopyrightCoins, whether they are received as royalty payments or bought as part of a potential “investment” into the crypto-currency.

Permissioned network:

CopyrightChains creates a consortium of computers that increases its decentralization and resilience based on both jurisdictional diversity and geographic diversity (somewhat similar to existing licensing laws of today). Owners of CopyrightCoins get the express authority to validate new transactions and to participate in the consensus mechanism. Consequently, CopyrightChains creates a system of hierarchy where members have different set of rights.

Triple Entry Accounting system (“TEA”):

A wallet address. Every transaction of royalties via CCIM debits one wallet and credits another. The account sending the value digitally signs the transaction, and this digital signature is stored in the third column of the TEA. Consequently, the third column forms the CopyrightChains and the integrity of every transaction is ascertained by reading the CopyrightChains (see “Technology” section above for details).

Business process automation:

IMCA uses business process automation built on consortium and a network that is capable of moving in different directions and that can be optimized for the implementation of future changes as the DSP’s business models evolve.

The CopyrightChains allows for transparent governance within IMCA. While this, at times, can be a challenge, it is certainly less of a challenge to ensure evolution of the network in question than where the network is un-permissioned and subject to public governance challenges.

The end result is that it is easier to govern royalty payment processes and registration of Copyrights via the data management solution used by the network.



The Digital Signature Certificate Authority (“DSCA”):

IMCA maintains a public database of all public keys or encryption keys of digital signatures along with their legally identified owner. To effect this, IMCA issues digital signature certificates. All transactions which happen on the TEA require a public key and a private key to digitally sign the transaction, and IMCA now verifies the identity of the signatory every time. All of it creates an undeniable, immutable and future proof record of transactions.

Sybil tolerance:

Some blockchain networks (such as Bitcoin) allow anyone to add their node to the network. That brings the concern that someone could add so many nodes that they effectively control the network. It’s known as a Sybil attack. Bitcoin makes Sybil attacks unlikely by making them prohibitively expensive.

In the CopyrightChains network, IMCA controls the member list, so Sybil attacks are not an issue.

Permissions and transparency:

Permissions are rules about what users can do with data. An identity, which signifies the holder of a unique private key, can be granted a permission for each transaction type. The CopyrightChains is setup to incorporate all owners of copyright that are consortium “members” (in the case of music: record labels, music publishers, musicians, collecting societies, and support providers such as lawyers and agents). Permissions hold the key to transparency and are usually based upon existing contractual agreements that can be transferred to “smart contracts” in CopyrightChains (see earlier description).

Dual integration:

Dual integration is the process of integrating a specific legal contract into a specific smart contract running on a distributed data store, such as CopyrightChains. This allows parties to use established dispute resolution processes in the jurisdiction(s) of choice while also using a smart contract as the primary mechanism for administering the data-driven interaction that attends to the agreement between the parties.

Smart contracts and Tokenization:

Smart contracts give IMCA the ability to implement processes which can be executed safely anywhere and remain immutable and verifiable. This increases IMCA’s compliance requirements and ensures that royalties transfer is according to copyright owners share (CopyrightShare) in the copyright (identified by CopyrightID).

Deterministic computation:



All participants in the IMCA ecosystem must be able to compute the licensing of Copyrights and achieve the same result. The two most important factors in computing a Copyright license request are accuracy and timestamp, however randomness is to be avoided in each node of the ecosystem, something that is not possible in a decentralized blockchain network. Handling of accuracy and producing identical timestamps is the very definition of deterministic computation and can only be achieved in a permissioned and private network like CopyrightChains.

Note: Outside a deterministic computation framework, it is highly improbable that the members of a consortium ecosystem will have their computer clocks so finely tuned that they are exactly the same – down to the millisecond.

Content and addressable storage:

Each data file and all of the blocks within it are given a unique fingerprint called a cryptographic hash. CopyrightChains removes duplicates across the network and tracks version history for every file. Each node stores only content relevant to that member, plus indexing information that helps figure out who is storing what. When looking up content, the network will find nodes storing the content behind a unique hash.