

The Song That Owns Itself

Towards a more equitable, sustainable, and interdependent creator economy

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Abstract. Creative expression—in all its forms—has been an innate impulse since humanity first crawled out of the sea; however, our earliest artistic gestures were not created for financial gain. Instead, creativity’s commoditization is far more recent and can be neatly summarized by the Medici Family’s involvement—a family known most famously as both bankers and patrons.

Centuries later, little has changed in the artist/patron power dynamic as hundreds of thousands of creators use unironically-named platforms (like Patreon) to make a living. Now, this uneasy nexus between art and commerce is at an inflection point as the development of blockchain technology has unlocked unprecedented possibilities for artists to independently control and monetize their work.

This paper presents a thesis of just one of these possibilities. *The Song That Owns Itself* (or *The Song*) reconfigures the patron/servitude dynamic embedded in the traditional music industry and its archaic contracts; instead empowering creative entrepreneurs and their fans by leveraging the tools of Web3. Below, we highlight the ineffectual, outmoded applicability of certain copyright structures buttressed against creator and consumer demand and fast evolving technologies. Additionally, we outline the financial and technological implications of this inversion.

Our view is positive-sum; our goal is not to obviate current industry participants, but rather to:

- I. Empower more artists to create sustainable careers on their own terms
- II. Increase the total addressable market for all current participants
- III. Increase the rate of entrepreneurial innovation
- IV. Expand the market for music into heretofore adjacent or orthogonal realms
- V. Enable consumers to play a more active role in the awareness building of works that move them
- VI. Create fast, transparent payment tools

All of the above gestures are governed by asking one simple question: *what does a song that owns itself want?* To which there is only one answer: *to be heard by the maximum number of people who derive meaning from the song.*

From this answer, we begin to (re)frame the concept of ownership for the world of digital copies: ownership is no longer about the assignment of exclusive, normative rights, but about derivation of personal meaning.

To achieve this, we utilize new and emerging technologies—inclusive of NFTs, social tokens, smart contracts, and DAOs—to coordinate the song’s goal while rewarding those in the ecosystem—whether fan, manager, label, publicist, etc.—who most robustly help the song achieve this goal.

The Music Industry’s Historical Relationship With New Technologies

Slow to change, the music industry has historically resisted the very innovations that ultimately led to renewed growth cycles. From the invention of the piano roll, to cassettes, vinyl, and downloads, to Napster (essentially a precursor of Spotify), the industry has fought vigorously against each revolution only to eventually be saved by the technological advances it feared would destroy it.

With time, new technologies inevitably emerged and consumer habits changed, rendering old systems and structures obsolete. However, change—particularly in deeply entrenched oligopolies such as the music industry—comes at a glacial pace when left to those in power. Rather, innovation and disruption nearly always come from the margins and the marginalized before entering the mainstream [1-3].

Over its long history, the music industry has created systems to address specific problems—hierarchies that have become intractably tied to its identity: record labels, publishers, managers, agents, and so on. These systems have worked to a point as creators, consumers, and intermediaries have all benefited. However, other systems have not treated all stakeholders equitably. An over-simplified—yet potent—example of this can be seen by comparing the enterprise value of many of the incumbent players in the industry against the average revenue generated by the majority of musicians.

Just as past innovations pushed the boundaries of the industry, so too will *The Song That Owns Itself*. We believe deeply that the thesis proposed here will lead to an expansion of the industry’s total addressable market and empower more artists to create sustainable careers on their own terms while benefiting artists (who we—admittedly—feel the most allegiance to), new market participants, and current incumbents—but on far more equitable footing than the industry currently stands.

Complexity and Systems in the Music Industry

For a distillation of the music industry’s commoditization of artists’ work, we look at how the industry treats song ownership—and how that treatment inevitably ends in artist exploitation under the current power structure. To start, below is a brief primer on how U.S. copyright law tackles song ownership:

- I. When a song is written, an original work of authorship is fixed in a tangible form by one or more songwriters. At this point, two copyrights are created:
 1. The copyright for the composition—the melody and lyric—that is owned by the writer(s). For simplicity, we will denote this copyright with the © symbol.
 2. The copyright for the sound recording/musical work—the recorded rendition of the above composition—that is owned by the performer(s) of the melody or lyric. For simplicity, we will denote this copyright with the ℙ symbol (for “phonogram”).
 - a. From time to time, the creator is the owner of both the © and the ℙ; that is, a single person who writes the melody and lyric *and* records a rendition of this melody and lyric owns both the © and the ℙ
 - b. At other times, the person who owns the © does not own the ℙ. For example, Dolly Parton wrote and controls the © to “I Will Always Love You.” However, Whitney Houston recorded a version of the song, which means that the ℙ for Whitney Houston’s version is owned by Whitney’s label, Arista Records, who pays both Dolly Parton and Whitney Houston a royalty (a “mechanical” royalty to Dolly Parton and an “Artist” royalty to Whitney Houston) every time Whitney’s version of the song is reproduced and distributed, be it via a stream, download, CD, etc.
- II. At the creation of copyright, any and all authors of the song are granted a number of exclusive rights as codified in section 106 of the U.S. Code [4]. In essence, these exclusive rights limit the ability of any party other than the holders of the copyright to exploit the work—commercially or otherwise—without a license.

Historically, artists have been either unable or uninterested in self-financing and independently releasing their work due to financial constraints, lack of marketing expertise, or the real—or perceived—view that self-releasing is burdensome and ineffectual. As a result, artists have signed with major labels and/or publishers, trading ownership in their sound recordings (the ℙ outlined above) and exclusivity of their name and likeness in exchange for financing, distribution, and promotional support.

However, over the past 30-odd years, a number of technological and cultural advances have made it far more feasible for artists to create, distribute, and promote their work without the backing of major labels or publishers:

- I. **c. 1995** the advent and proliferation of ProTools meant it was no longer prohibitively expensive for artists to record independently
- II. **c. 2005** the advent of digital downloads and distribution (notably TuneCore), meant it was no longer virtually impossible to widely distribute copies of artists’ releases without labels’ distribution services
- III. **c. 2007** the rise of social media made it possible for artists to promote their own works (to both the media and fans) without labels’ promotional services
- IV. **c. 2011** the rise of AWAL/Kobalt and other major-owned operators, such as ADA, The Orchard, and Caroline, led to significant investments in and advances for artists outside of the traditional major label deal, including new deal structures in which songwriters maintained ownership of their

copyrights. While these operators have often been inconsistent in the value exchange, they created a more even playing field in a more equitable model.¹

- V. **c. 2020** the rise of disintermediated transactions as a result of smart contracts and decentralized ledger and blockchain-based databases made it possible for artists to transact—particularly in micro and fractionalized payments—for their works. Additionally, royalty collection and reporting were previously beyond the reach of most performers and writers, who instead relied on labels and publishers to provide these services.
- VI. **c. 2021** the significant rise of NFTs and social tokens made it affordable and easy for artists to coordinate and create incentives for their fans without third parties
- VII. **c. 2021** the nascent rise of the Metaverse—accelerated by the forced physical isolation of COVID-19—has resulted in unprecedented demand and technological tools to create audience- and revenue-generative interoperable opportunities into music-adjacent or music-orthogonal markets

With each of the advances outlined above, the *actual* value labels and publishers provide artists (both performers and writers) has become ever more measurable—and tenuous. While labels and publishers still have a role to play in investment, A&R, and marketing, access to capital is becoming more democratized as the market (driven by consumer data) redistributes value more evenly. As more commercial success stories emerge from this non-traditional sector, artists’ confidence will continue to increase and wholesale reliance on major labels and publishers will decline [5].

With each stage of development iterated above, new systems were established to solve for the innovations and manage rights, accounting, etc. While many of these systems are necessary and do create value and opportunities for artists, many others do not.

As just one example: the amount songwriters can charge artists who want to record a new version of an original work is artificially capped by governmental statute [6]. The intent behind this Statutory Mechanical Royalty Rate—a rate set by Congress—was to address the always-delicate balance between the right of the individual and the good of society. To this end, long prior to the development of technologies that could easily track the usage of works, a legal system that compelled songwriters to grant a license to any and all who wanted to record a version of their work at a maximum rate set by the government was the most sensible way to find this balance. However, in an era when we are able to map a human genome and know precisely what, when, and where content of all stripes is created and consumed, the fact that this vestigial mechanical licensing construct has not been updated highlights just one of many antiquated, good-faith systems now hindering growth potential for all stakeholders.

Of course, the Statutory Mechanical Royalty Rate is simply the tip of the iceberg when it comes to issues of valuing and commoditizing music. This governmentally-imposed limitation not only prohibits songwriters from determining who may or may not re-record their original works but also limits the price songwriters can charge when their original works are reproduced and distributed by other artists or labels. In addition to the government regulation (and thanks in large part to the fact that the 35-year Copyright Reversion Act is hardly, if ever, enforced), major labels, through life of copyright assignments and extensions, have all but guaranteed that—even after artists recoup advances and expenses and begin generating massive ongoing

¹ The proliferation of this new array of artist-service companies—including AWAL, now owned by Sony—showed a recognition of the imbalanced economic relationship between major labels and artists. Clearly these gestures represent an improvement. However, we believe they are an evolutionary step to be improved upon via the concepts presented here.

profits with little to no support from the labels—artists never recover the underlying ownership rights to their original works. Clearly, the system is deeply flawed and only working for a limited number of the most popular artists.

Aligning Systems With Artistry and Sufficient Technologies

Now, we believe the music industry is at an inflection point. The emerging set of tools loosely defined by Web3—including decentralized ledger technology, NFTs, social tokens, DAOs, and persistent identity across new mediums—have further negated the advantage labels and publishers provide artists. This has paved the way to solve the “last mile” problem of artists by connecting them more immediately with their fanbase and customers. In doing so, a larger recalculation of the value of songs, the concept of ownership, funding, remuneration, and coordination between creators and their consumers, licensors, and fans can take place. This shift holds the promise of enabling more artists to create sustainable careers on their own terms, absent intermediaries and rent seekers.

We have conceived of *The Song That Owns Itself* to demonstrate the ideas presented above. The remainder of this white paper puts forward the technical specification and DAO governance related to this experiment.

We hope this is the first of many such innovations—that it inspires others not only to attempt similar experiments, but also to better understand both the problems such an experiment solves for and the possibilities for new and expansive opportunities not yet conceived of by us or others.

What Is the Song That Owns Itself?

To fit a capitalist system, music has been forced to conform to an innately unnatural way of rating art. But valuing a song based on the number of plays or streams it receives is a flawed metric—replays do not measure a song’s true effect on its listener. Further, the contractual relationship between rights owners and DSPs, market share of said rights owners, and the broader human constructs around how these plays get paid all have an impact on what a passive listener hears [7]. Add to this the human predisposition to the familiar and the music an average consumer hears on a daily basis quickly becomes homogenized.

The Song That Owns Itself reimagines artistic ownership for the digital age and redefines value based on individual experience. Instead of conforming to the outmoded two-party ownership model described above under Complexity and Systems in the Music Industry, *The Song That Owns Itself* is governed by a DAO and utilizes smart contracts and decentralized ledger technology to share its ownership—its © and ® copyrights—with all its champions, including its creators, art directors, record label, marketers, licensors, and, most importantly, its Net Promoter fans (see below). By doing so, *The Song That Owns Itself* equitably divides ownership—and therefore profit participation—between those most passionate about and most invested in its success.

What Does The Song Want?

There is a phrase among seasoned musicians—*servicing the song*—that is uttered or implied when a group of musicians, writers, or producers put their respective egos aside, and instead work collectively for the greater benefit of the song; even if it means deemphasizing their own participation in the end result. It is a beautiful sentiment and one that defies the capitalist framework equating contribution to worth.

While in reality, by remaining silent, these writers lose the revenue earned by being deemed a co-writer, performer, or producer on a work, if we suspend disbelief for the sake of argument, true artists do not operate from a basis of finances first and art second. Thus, we begin our inversion from the premise of *servicing the song* and asking: *what does the song want?*

Art wants first to be seen and heard, and second, to be appreciated. However, as deconstructed above, quantity of streams or views does not equate to quality of appreciation. Thus, the song wants to be heard by the most possible people who most appreciate the song. Put simply: it is not about how many robotic *replays* a song generates, but rather the effect the song has on actual people and, therefore, the effectual network it creates.

The Power of the Dao: Putting Control in Artists' Hands

The DAO for *The Song That Owns Itself* is designed to align incentives across its stakeholders in a manner that aligns with the stated goals and values of having *The Song* heard by the maximum number of people most predisposed to care. Utilizing a DAO instrument obviates many of the historic issues related to contracts around art, including (but not limited to): information asymmetries between creators and stakeholders; trust issues related to unilateral contractual changes; auditability; governance; remuneration; assignability; and metrics and transparency. Additionally, and not insignificantly, we believe a DAO to be the appropriate vehicle to, more poetically, measure the cultural seeds a work of art sows, as defined by the variety of gardens that spring from it, artistically, sonically, socially, and so on.

Below are just a few of the use cases for how we believe the DAO can further enshrine control in artists' hands.

Solving for Incomplete Contracts

In Contract Theory, the notion of a complete contract is aspirational; that is, it is rare for a contract between parties to fully accommodate all possible benefit and loss scenarios [8]. As such, there is typically one party in a so-called incomplete contract that attains more benefit than the other through no bad faith actions, but rather because of changes in technology that ascribe more benefit to one party over the other.

Residual and Outmoded—but Still Enforced—Contractual Terms

An example of this theory can be seen in the music industry when the dominant form of consumption shifted from the purchase of physical goods (vinyl and CDs) to downloads, the cost of goods sold fell dramatically, and thus the major labels' profits increased sharply while artists' income stayed the same. This imbalance occurred when standard contracts between artists and labels stipulating a set of financial terms

based on then-current technological and economic models (i.e. selling music via physical goods) continued to operate under those outdated terms even after the cost of creating and distributing CDs fell to zero.

Of course, over time, contracts were updated, but certainly not at the behest of the labels; it took litigation and massive amounts of time and energy to modify the contracts, bringing them more in tune with reality; the costs were astronomical, and artists felt the pain [9].

Both these ongoing litigations and ensuring contracts are followed correctly disproportionately drain artists' resources. By building the agreed-upon contractual terms into an automated, decentralized, and transparent DAO, we can address these incompletenesses as an attempt to create a (more) complete ecosystem.

Breakage

Another example of this theory is Breakage. Breakage is the concept that monies—for example from advances paid by DSPs to labels for the right to stream the labels' catalog—rarely, if ever, find their way to the artists. By setting up automatic payments into predetermined accounts based on smart contracts, the DAO allows for quick allocation of correct funds for all parties involved.

Droit Moral

Droit Moral (“Moral Rights”) is not an accepted construct in U.S.-based copyright law. While the U.S. attempts to address this issue via tort law, other countries explicitly uphold Droit Moral. Via a DAO structure, willing participants are able to agree upon the specific ways their works may not be used and—as outlined below—the innate audit trails create the ability to rely on rule of law and contract law to enforce the contracts, as opposed to relying on governmental or statutory intervention.

Free Market Economics

As stated throughout, intervention in the form of governmentally mandated limits—e.g. an imposed maximum rate songwriters must charge when their songs are recorded by another artist—has not only kept artists from valuing their works as they see fit, but has hampered innovation. The DAO will allow artists to set their own predetermined rates without getting involved in the negotiations.

Transparency

While we are by no means suggesting that all details of contracts should or must be made transparent for all to see, the DAO provides creators and stakeholders the option of transparency at their discretion.

Audit Trails

As DAOs rely on blockchain tech, fundamental competencies such as immutability with respect to records and transactions is a given. This represents a tremendous leap forward with respect to artists' rights. Historically, records and contracts have been held within siloed institutions—labels, publishers, PROs, copyright offices, etc.—and the accuracy, and even the accessibility, has been far from optimal. In such cases, it is typically the artist who suffers.

Remuneration

As outlined above, given blockchains' fundamental disintermediation, one of the technology's benefits is reduced transaction costs and increased speed of payment. Current systems of payment from music consumers to music creators are slow and full of intermediaries—each taking their cut. The DAO obviates many of these issues, instead putting the majority of the profits directly into the hands of the stakeholders [10].

Contract Enforcement

DAOs can alert participants—via smart contract—to relevant dates (such as license term expirations), reducing good-faith contract breaches and providing audibility around bad-faith contract or term breaches.

Net Promoter Score and Rewarding Fans

A final example of the power of the DAO revolves around the core notion of *The Song That Owns Itself*: empowering and rewarding fans of *The Song* when they market *The Song* to their friends.

One of the most blatant misunderstandings around commerce in general is that marketing is effectuated primarily by companies and systems rather than via recommendations from trusted sources. While it is outside the scope of this document to detail this bizarre, persistent phenomenon, the fastest way to understand this is to ask how you discovered the majority of your favorite music, books, TV shows, or restaurants. More than likely, the answer is through a trusted friend.

This phenomenon, frequently referred to as Net Promoter Score (NPS), is the single most important element in all commerce, yet no contract between a creator and a label or publisher ever accrues benefit to these most important marketers; meaning the contracts are fundamentally incomplete. The runaway success of NPS can be seen in the rise of *stans* for different artists. A recent example is the BTS Army operating independently of the band to reach shared goals [11]. However, the fans do not get to share in BTS' financial upside; instead, they are rewarded via: 1. the pleasure of providing useful information to someone; 2. the feeling of self-actualization that comes with it; and 3. the ability to now discuss something of meaning with another fan.

Therefore, by tracking tokens through the rules of the DAO, *The Song That Owns Itself* should reward anyone and everyone who helps it be heard by the most possible people who most appreciate it—including, in large part, the Net Promoter fans. Historically, tracking and incentivizing Net Promoters has been challenging, but the advent of Web3 and *The Song That Owns Itself* present a new architecture of participation to facilitate this.

Contours of the DAO

The DAO that governs the community around *The Song That Owns Itself* will be guided by the above-principle related to maximizing the impact of *The Song*—defined as *The Song* being heard by the maximum number of people who have the maximum amount of appreciation for it.

Each *Song That Owns Itself* smart contract should mint a *fixed* number of tokens (STOIs), representing governance participation in the DAO as well as financial participation in *The Song*. At higher individual allocations or in an organized group of token holders, voting and governance rights will accumulate just as a company might allow shareholders to “vote their shares” with the larger shareholders holding more voting power. As with membership in an organizational structure like an LLC in the United States, the DAO that governs and makes decisions for *The Song That Owns Itself* should specify that, in all decisions related to *The Song*: *the will of the majority (>50.00%) of participating token holders should determine the outcome of any vote*. As with any organization, the DAO should create provisions for how votes are conducted and resolutions adopted.

At formation, the DAO will include the following:

- I. The song²
- II. No third party—including, but not limited to: labels, publishers, Performance Rights Organizations, performers, producers—having any rights or claims on the song
 - A. Importantly, the DAO itself will license the work to the relevant PRO on behalf of the writer(s)/publisher(s)
 - B. Similarly, with respect to licensing of the work for synchronization, the DAO will license
 - C. Similarly, with respect to DSP, the DAO will issue licenses
- III. The writer(s)/performer(s) of the song who assign the copyright to the composition and sound recording to the DAO
- IV. Other contributors and caretakers of the song who perform material rolls and contributions for its existence and success, including but not limited to:
 - A. PR
 - B. Production, engineering, and mastering
 - C. Art direction, design, and creative
 - D. Other management and representation roles which contribute to the value of the song
- V. Later participation by individuals or organizations based on specific activities that help achieve *The Song*'s purpose:
 - A. Fans who demonstrably show they are net promoters; examples include, but are not limited to:
 1. Using social platforms to link to *The Song*'s landing page
 2. Texting and/or emailing the link to *The Song*
 3. Covering *The Song* and posting it
 4. Creating editorial commentary around *The Song*
 5. Creating derivative works (e.g. videos) of *The Song* and sharing them
 - B. Fans with the largest impact—based upon KPIs set by the caretakers—will be awarded a higher number of tokens
 - C. Good-faith realized opportunities by those in the music or related industries who help the song achieve its purpose; these include, but are not limited to:
 1. Licensors of the work for film, TV, VR, etc.
 2. DJs, program directors, or other platform curators
 3. Those who select and program music for offline venues and activities
 4. Educators

² For the purpose of this DAO, a “song” is defined as a “controlled composition,” meaning the authors of the song have the complete and unfettered rights to both the copyright of the composition and the copyright of the sound recording.

5. Health and wellness providers

Operation, Tokens, and Governance

Day-to-day operations and governance of *The Song That Owns Itself* will be accomplished through regular formal or informal meetings of the DAO members. In cases where the DAO majority is made up of the band who authored *The Song*, this will look much like how things get done for independent musicians today. In more complex cases with more participants, the structure may need to become more formal. Below, we outline the governance stages from minting to dissolution:

- I. Minting and initial STOI token distribution
 - A. Before a *Song That Owns Itself* is released and made publicly available, the DAO should mint its smart contract (e.g. an ERC1155 [12]) and manually perform an initial distribution and transfer of STOI tokens to reflect the agreed-upon interest participation in *The Song*. For example, a sensible starting point, 1,000,000 Shares tokens (or STOIs) should be minted inside the smart contract when it is created, to be divided among the initial participants in the DAO and held in reserve as agreed at formation.
 - B. The DAO should still grant the writer(s)/performer(s) of the song a flat allocation at this time, even if they do not wish to participate actively in the DAO or governance of the song.
 - C. The DAO should retain some of its token supply for later rewards.
 - D. If using STOI.org, consider granting STOI.org a flat 1% token allocation for administrative costs, hosting, chain transactions, and maintenance. Our addresses can be found on STOI.org.
- II. Later Rewards
 - A. As in section V above, the DAO should anticipate rewarding STOI tokens to fans and other individuals or groups who help amplify and achieve *The Song's* Purpose. This might be as simple as awarding the first ten thousand people to come to the band's website with a few tokens each, or as involved as awarding tokens to someone who performs a complex promotional task during *The Song's* release.
- III. Governance
 - A. The caretakers defined above in Contours of the DAO will be responsible for ensuring that any uses of *The Song* are advancing *The Song's* purpose
 - B. The caretakers can and will enter into agreements on behalf of *The Song* when necessary, but endeavor to limit transactions to be coordinated by the issuance of tokens where possible
 - C. The caretakers will meet on a regular basis to determine allocations to fans
 - D. One caretaker will be responsible for tracking and data management and for this role, will be allocated a specific percentage of STOI tokens (usually 3%)
 - E. In all decisions which require a vote, the STOI token distribution will determine voting rights: the will of the majority of token holders wins
 - F. The DAO should strive to retain at least 51% of the total quantity of STOI tokens created when *The Song That Owns Itself* smart contract is minted if the DAO wants to maintain control of *The Song's* future.
- IV. Synch, stream, and other revenue
 - A. Revenue generated by *The Song That Owns Itself* should be held in escrow by the DAO (whether in fiat or virtual currency) until reconciliation and distribution (see below)

- B. Revenue should be regularly disbursed (e.g. monthly or quarterly) according to the total granted (not total outstanding) Share tokens (STOIs), as defined below.
- V. Financial reconciliation for STOI token holders
 - A. At a regular interval determined by the DAO (monthly, quarterly, etc), the caretakers responsible for tracking and data management will calculate payments due to STOI token holders and disburse those payments. STOI.org will host a reconciliation tool but use of that tool is not required.
 - 1. For example, in the case of an Ethereum-based smart contract, determining the distribution of STOI token holders for a *Song That Owns Itself* can be done by looking at the transaction records publicly available on the blockchain
 - B. Alternately, STOI token holders might be able to “cash themselves out” whenever they wish from a reserve accumulated in the STOI smart contract. In this case, the STOI smart contract would need to support this kind of direct, ad hoc reconciliation call. Care should be taken with this strategy, however, to maintain security and correct calculations. STOI.org will host reference examples of smart contract codes for both cases.
- VI. Dissolution
 - A. Upon the caretakers unanimous agreement, the DAO will dissolve and a to-be-designed exit to the community will occur. If no strategy is defined, governance will revert to the STOI token holders themselves.

At smart contract creation time for *The Song That Owns Itself*, a finite number of “Share” tokens—or STOIs—should be minted. The underlying smart contract should *not* allow additional minting. As above, some or all of these tokens will be assigned to DAO participants or interest-holders in *The Song That Owns Itself*, defined by the DAO structure. As with stock in a traditional company, total ownership interest in *The Song* can always be calculated by counting the total STOIs held by all addresses. In cases where *The Song* wants to reward individuals for promotion or other participation which furthers *The Song’s* mission, STOI tokens can be transferred from the DAO to those participants directly. In this event, the current DAO participants might “dilute” just as shareholders would in a corporation as more unallocated shares became allocated.

Share tokens could be implemented as an independent ERC20-type token, but more preferably, an internal token is defined by *The Song’s* underlying smart contract. A smart contract spec like ERC1155 allows for all the necessary tokens *The Song* needs to be minted internally to the contract either on demand or in finite supply at contract creation [12]. Please refer to the reference implementation contract at STOI.org for more details.

As a simplified example, imagine four people work together to create a song. They all contribute equally to the writing and recording of the song, and also want to include their production and engineering team in the smart contract. They create a DAO for the song which allows for 1,000 Share tokens (STOIs) to be minted at the song’s smart contract creation event. They also specify that, of those shares, 200 will be granted and transferred to each of the song creators, and 100 will be granted and transferred to their production and engineering team. These grants will leave 100 Share tokens unassigned that can remain in the smart contract itself, inside the DAO’s address indefinitely, or be transferred to fans or other later participants as the DAO sees fit.

Later, the song is released and performs well, generating \$100,000 in the first quarter from streaming, sales, licensing, and the sale of the song's NFT token. When the DAO does financial reconciliation, proceeds are divided according to the total granted (not total outstanding) Share tokens:

- I. Each of the song's creators gets \$22,222.22 [$\$100,000 \times (200 / 900)$]
- II. The song's production and engineering team gets \$11,111.11 [$\$100,000 \times (100 / 900)$]

In a real world situation, these totals would have to also account for transaction costs and other incidentals, but hopefully the framework is clear and familiar to anyone who's ever held common stock or membership in an LLC.

In the case of an ERC1155-based smart contract, one might also consider minting additional types of internal tokens to manage various, specific consumption and distribution needs of *The Song*:

- I. **The NFT token:** rather than making the smart contract itself transferable, it is preferable to represent the "NFT" aspect of *The Song That Owns Itself* as a single NFT token in the smart contract which can be subsequently assigned, resold, etc. Owning this token might also grant special rights to interact with *The Song* in specific ways. The ownership history and intrinsic value of this NFT token preserves *The Song's* history and provenance. There should only ever be *one* NFT token per smart contract and it should be minted at smart contract creation. Subsequent token transactions should always pay the smart contract address or DAO address a flat fee.
- II. **The STOI token:** as mentioned above, this represents *financial* interest in *The Song* itself. All payments through the DAO are distributed according to holders of these tokens. These tokens are finite and transferable. A sensible default might be 1,000,000 total. Subsequent token transfers should always pay the smart contract a flat fee.
- III. **The INTERACT token:** these tokens might represent an "impression" in the display advertising sense. INTERACT tokens could count *up* from zero, with a call to the smart contract at some interval to update the total for every "display" or delivery of the underlying media, interaction, or other payload. These tokens are infinite and non-transferable. Keeping them as ERC1155 tokens allows for more complex reporting and interactions later on as opposed to keeping an internal field in the smart contract with this number.
- IV. **The PRINT token:** these tokens might represent ownership of a certified copy or "print" of the song. They are ideally finite, transferable, and should also impart the ability to mint and distribute STREAM tokens. Anyone who held a PRINT token could in theory become a "streaming service" themselves and call to the smart contract to issue STREAM tokens which allow the holder to stream the track. As a starting point, 100,000 PRINT tokens might be minted at smart contract creation. When they are gone, holders must find other PRINT holders to negotiate with and buy from independently. Token transfers should always pay the smart contract a flat fee.
- V. **The STREAM token:** a holder of a stream token could be allowed by the smart contract to pull an ephemeral stream of the underlying media, in exchange for which the streaming token is burned or reclaimed by the smart contract.

Transactional Realm Visualization for The Song That Owns Itself

DAO Member (address 0x456...)

- Each DAO Member “votes their STOI” meaning the more STOI Tokens you hold in a song, the more voting power you have

DAO (address 0x345...)

- Responsible for STOI Governance, management and administration
- Administers proportionate payments to the STOI contract, token holders can then call Reconcile() on the STOI contract to get paid based on how many STOI they hold.
- STOI.org can host these transactions, but doesn't have to, they can be requested directly by anyone with STOI.

STOI (ERC1155, address 0x123...)

- Issues NFT Token
- Issues STOI Tokens (Finite)
- Can Issue other tokens (Interact, etc)
- Must Support a Reconcile() function call to allocate ETH to Token Holders at a specific point in time
- The Reconcile function should look at all token holder addresses at a given time period and run a transfer to those addresses. The DAO should maintain a process to examine Transfer Events to determine the current addresses to pay

STOI Token Holder (address 0x567...)

- Can access enhanced experiences based on STOI token holding status
- Can call EstimateReconcile() on the STOI contract to see what they will get paid based on how many STOI they hold
- Can trade their STOI on OpenSea or similar

NFT Token Holder (address 0x678...)

- Can access enhanced experiences based on NFT token holding status
- Can trade their NFT on OpenSea or similar

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