Ragtag Ecosystem: A web3 ecosystem built around open standards for asset IP protection for music and related assets

Ragtag Protocol: Decentralized asset ownership with an incentivization and monetization protocol that uses collaboratively weighted contributions and an integrated valuation and automated funds distribution algorithm

Core Problem: There is not a universal standard approach to both decentralized and also incentivized asset ownership that is based on explicit usage rights management. This is the case even as disruptive technologies such as web3 and generative AI challenge existing IP legal frameworks and traditional business models at a breakneck pace.

Why Now? Why Ragtag?

- **Generative AI**: There are universal existential challenges around how copyright and intellectual property will interface with generative AI and LLMs in a way that both protects creator's rights and simultaneously increases profitability for labels, catalogs, and platforms
- **Industry Acceptance**: Ragtag has established collaborations with renowned music entities and tech ecosystems to underlie our credibility
- **Tech Infrastructure**: Built using the latest in decentralized web3 technologies, ensuring music catalogs are managed and licensed efficiently, securely, scalably, and privately

Huge Market Potential

The licensing market, in which labels and catalogs operate, stands at a staggering value of $3.4 billion in 2023, with a promising growth rate of 10.2% predicted through 2027. Ragtag will also have a quantum effect of increasing the size of the market and helping to create new markets.

Unique Approach to Adoption

Ragtag targets all stakeholders in the ecosystem simultaneously through decentralized adoption incentives and an ecosystem-centric alliance structure led by web3 industry veterans

Ecosystem Stakeholders

- **Artists** - Music writers, performers, producers, and collaborators

- **Labels** - Service providers who increase the value of music through artist development and brand partnerships
- **Catalogs** - Large collections of music managed as a financial asset class, protected and monetized efficiently
- **Stakeholders** - Everyone else, from consumer listeners to tech tools and distribution platforms, everyone who interacts with music, directly or indirectly, pre or post production
- **Licensees** - Facilitates new opportunities for artists, labels and catalogs for sync licenses across TV, film, gaming, and metaverse. Based on a revolutionary new "Ragtag Enhanced Stem Sampling" (RESS) license class using a Proof of Originality™ protocol

Multi-Party Decentralized Incentive Mechanics

- Ragtag utilizes a groundbreaking multi-party decentralized stakeholder incentive structure based on pluggable incentive models for any and all contribution types into the Ragtag ecosystem using fully homomorphic encryption for privacy preservation
- Contributions by any stakeholder to the ecosystem, including specifications for APIs, data and metadata formats, as well as resources such as API platform credits, utility and other crypto tokens, or capital investments, are all equitably incentivized across a range of subjective and objective measurements
- New types of incentive mechanics can be developed by any new stakeholder, which are voted upon to validate the value of the underlying asset and the value of each contribution, all using fully homomorphic computation and zero knowledge storage.

How Ragtag Benefits Catalog Owners and Record Labels

- **Streamlined Onboarding:** Will integrate any catalog seamlessly into the ecosystem easily
- **Low Friction Licensing:** Often initiated by either brands or platforms
- **Dynamic Price Discovery:** Historical comparable data analytics upon which to base initial price discovery and auctions
- **Transparent Monitoring:** Gain insights into how a catalog is accessed, played, and licensed, ensuring you're never in the dark about your assets' performance.
- **Incentivized Growth:** As a catalog grows and interacts with other ecosystem participants, all stakeholders gain more from diversified revenue streams and increased market opportunities.

Ragtag Ecosystem Momentum

- Advanced conversations and close collaboration and with multiple innovative record labels, catalogs, and web3 ecosystems such as NVAK Collective (https://nvakcollective.xyz), META JAX, (https://jaxblast.com), HRDRV (https://hrdrv.com), and OMA3 (https://www.oma3.org)
- dApp prototype for sync rights licensing opportunities and sampling stem pilot with CampusJax Crypto Jazz Festival, built with Polygon, DefraDB, ThirdWeb, NextJS, ZamaAI
- Collaboration partners have affiliations with established enterprises such as Warner Brothers, Universal Music Group, Empire Records, Disney, Riot Games, and others

PRINCIPAL COLLABORATORS

MANNY MORENO (WARNER BROTHERS, DIGITAL CROSSROADS), NATALIA VELEZ (RIOT GAMES, DISRUPT3RS), TIM ELLIS (META JAX), DJ THOMSON (ADOPTA), ALEX STRAUSS (ADOPTA), ALFRED TOM (WIVITY), VIGNESH SUNDARAM (VORLDS), KARL MOLL (12 BUTTERFLIES), RAMI EADEH (EMPIRE RECORDS), ORPHEUS LUMIS (COVALENCE), CAMERON SAJEDI (STARLING FOUNDRIES), LINC GASKING (TABERSTEIN PARTNERS), MICHAELA SHILOH (HRDRV), TANYA SOMAN (SOUTHPAW CAPITAL), WENDY STARLAND (WENDY STARLAND), THIERRY ASCAREZ (WINAMP)

Ragtag Dynamic Behavioral Incentive Mechanics

The Ragtag protocol enables behavioral incentive mechanics that can be built directly into the transaction and accounting layers of the system. Ragtag represents an integrated synthesis of crowdfunding, loyalty and rebate incentives, lottery mechanics, different auction types, and both a royalty and waterfall fund accounting system.

Early contributors, collaborators and adopters, such as within the first 10% or 20% of listeners, can receive anywhere from 2x to 10,000x their contribution as a stakeholder reward for their early and enthusiastic participation. Stakeholders are encouraged and incentivized to pay for content they love, and more for content they love more, with a chance to receive substantial revenue just by consuming content as they normally do. All of the complexity and sophistication in the accounting happens behind the scenes without the need to represent different complex investment mechanics directly to end users to interfere with the primary experience of enjoying the music.

By integrating these types of financial accounting patterns (equity, revenue, royalty, fund, and lottery) into a unified open instrument, and by using the power of the overall incentivized user base as a leveraged network effect, Ragtag will serve to broaden investment and participation in the market and increase its overall size. By making the end consumer listener and all connected contributors into automatic stakeholders, Ragtag will bring in more revenue while allocating it more efficiently and dynamically to those that deserve it.

Furthermore, by centering payout into a single converged process, this also provides for a unified and simplified interface available to all parties, using decentralized database technologies for settlement and transparency in reporting. Certain core algorithms in the API will be ported onto the blockchain as smart contracts for additional security and transparency.

Ragtag Incentive Model Overview

A song owner can set the minimum price for listening to a song, which is minimally the cost of distribution amortized over the territory and platform availability, based on acquired content distribution rights that factors in compute, storage, memory and bandwidth needs.

Each time a user listens to the song, they may pay at least the minimum price for listening to the song, but may elect to pay more. When it is time to distribute revenue from a song, there are multiple different pluggable payout weighting types, which can be combined in different weightings of the overall 100% of all shared revenue, such as:

- Order weighted (earlier in, higher payout)
- Dollar weighted (blind reverse auction)
- Random weighted (lottery mechanics)
- Presence weighted (attendance)
- Location weighted (local community incentives)
- Contribution weighted (oracle-backed analytics)

Every song has a default payout table, customizable by the artist or representative, which can be voted upon and based on aggregated benchmarking. For example, 50% of revenue could automatically go to the artist, and the remaining 50% could be split with the community of listeners according to an incentive table that rolls over each month. There can also be open pools that can be reserved for special incentives such as gaining access to sync opportunities or delivery of certain marketing commitments.

There can also be an option for an automatic generational carry over of a percentage with a dilution schedule (in months), for example, 10% of current month going to all prior stakeholders according to the same payout schedules for each individual prior month, allocated across all months.

An artist and/or delegated business representative chooses both a minimum price for a song and a recommended price for a song, usually anchored in . A listener or sync licensee chooses both a minimum and maximum price for a song, where anything above their maximum will trigger a prompt to agree to the price, a prompt which could eventually include an advertisement alongside a recommendation for a similar yet lower priced song. Brand sponsors and advertisers can exist within the price arbitration process.

Model Scenario Example Breakdown

The following is an hypothetical breakdown of the remaining 50% of revenue to be shared by the

overall community of stakeholders based on the merit of their appreciation and engagement.

Purchase Order Weighted Accrual Criteria: 20% is paid at a decreasing rate proportional to the user's position in relation to others, ordered by purchasing time, with the effect of early adopters benefitting more than those that come toward the tail end of the revenue stream.

Intention: Those that are early are rewarded more than later users.

Dollar Amount Weighted Accrual Criteria: 20% paid on a sliding scale based on amount paid for song, calculated by squaring the payments and dividing by the sum of the squares, e.g three different listeners spending. .50, .20, .30 would receive .66 (66%), .10 (10%), and .23 (23%), respectively

Intention: Those that pay more and value the work more without knowing how others value the work are rewarded.

Randomly Weighted Accrual Criteria: 10% paid to 1 out of total paying stakeholders as a randomized drawing

Intention: Provide some elements of chance and luck and encourage participation a priori, similar to how China started providing lottery numbers on retail receipts in order to discourage tax evasion, and the popularity of the lottery for getting people to overcome transaction overhead.

Presence Weighted Accrual Criteria: This is related to those who experience the song performed live, for example 5% of the revenue could be split for anyone who attended a concert, weighted by both order and amount paid.

These scenarios below reflect different minimums that presume economies of scale for compute, memory, bandwidth, and storage:

Track Scenario One

Total listeners

25,000

Minimum price

$0.99

Revenue from users paying extra

$290

Revenue generated

$25,002.38

Revenue shared

$12,501.19 (50%)

Funds in order weighted payout

$5,000.48

Order weighted user count

247

Order weighted average payout

$19.45

First three order weighted payouts

$188.38, $181.00, $173.90

Funds in dollar weighted payout

$5,000.48

Contribution needed to break even: $2.34

20 users paid in $2.50 and received $2.67 each

10 users paid in $5 and received $10.69 each

5 users paid in $10 and received $42.75 each

2 users paid in $20 and received $170.99 each

1 users paid in $100 and received $4,274.84

24,962 users paid in $0.99 and received $0.00 each

1 user wins 10% revenue: $2,500.24

Track Scenario Two

Total Listeners

250,000

Minimum Price

$0.10

Revenue from users paying extra

$650

Revenue generated

$25,640.80

Revenue shared

$12,820.4 (50%)

Funds in order weighted payout

$5,128.16

Order weighted user count

247

Order weighted average payout

$19.95

First three order weighted payouts

$193.19, $185.62, $178.34

Funds in the dollar weighted payout

$5,128.16

Contribution needed to break even: $4.72

50 users paid in $2.50 and received $1.33 each

25 users paid in $5 and received $5.31 each

10 users paid in $10 and received $21.22 each

5 users paid in $20 and received $84.89 each

2 users paid in $100 and received $2,122.37 each

249,908 users paid in $0.10 and received $0.00 each

1 user wins 10% revenue: $2,564.08

Track Scenario Three

Total listeners

2,000,000

Minimum Price

$0.03

Revenue from users paying extra

$2,500

Revenue generated

$62,494.30

Revenue Shared

$31,247.15 (50%)

Funds in order weighted payout

$12,498.86

Order weighted user count

269

Order weighted average payout

$44.64

First three order weighted payouts

$470.87, $452.41, $434.67

Funds in the dollar weighted payout

$12,498.86

Contribution needed to break even: $7.55

100 users paid in $5 and received $3.31 each

50 users paid in $10 and received $13.25 each

25 users paid in $20 and received $53.02 each

10 users paid in $50 and received $331.36 each

5 users paid in $100 and received $1,325.44 each

1,999,810 users paid in $0.03 and received $0.00 each

1 user wins 10% revenue: $6,249.43

Model Scenario Example Technical Explanation

In the scenarios above, both the order and dollar weighted payouts total 40% of the generated revenue, at 20% for each of them. Also, the lottery payout represents 10% of the song's revenue. This is the default, but may be adjusted by an owner of the song. The chart below depicts payouts from the purchase order weighted payout in example scenario 3:
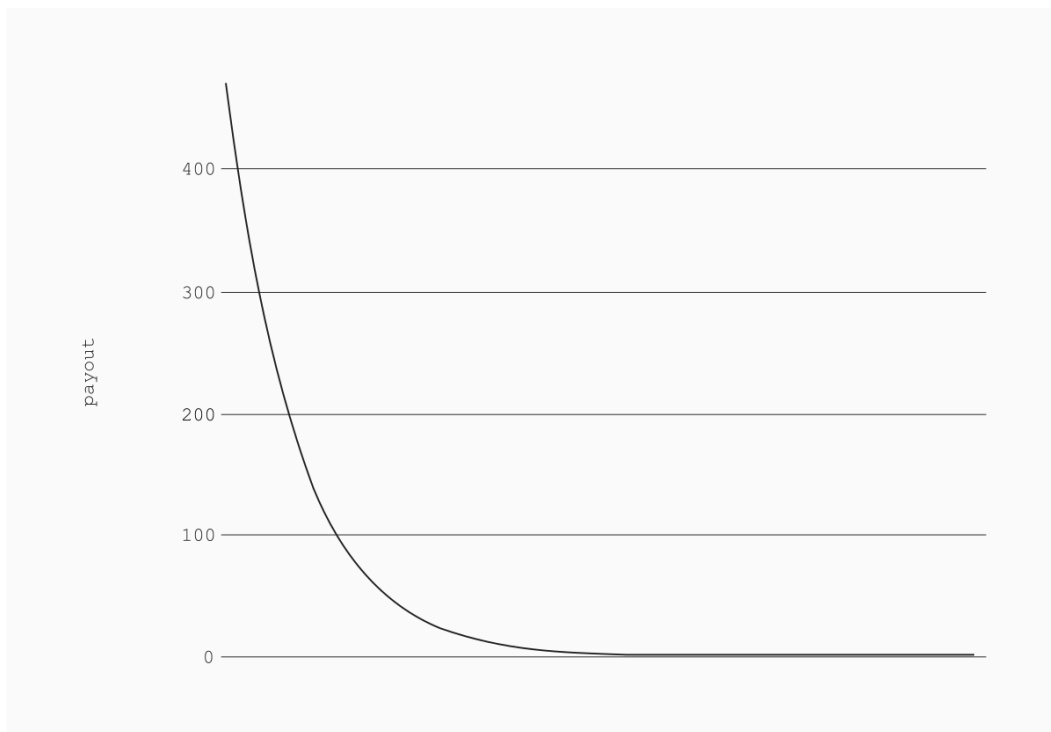
In this example, the payout decreases at a rate of 3.92% from $470.87 all the way down to $0.01. Given T is the total revenue being shared, and p represents a percentage being paid to the nnth user, then the nth user's payment received is: $p*T(1-p)(n-1)$. The purchase order weighted payout represents the converse of compound interest, and those who are the earliest adopters receive the largest share of the revenue.

As an example of what a user may accrue over the period of a year is the following: given Alice listens to 6,167 unique tracks and receives an average payout from the purchase order weighted

payouts for 1% of those songs, of which all of the songs have payout characteristics similar to the second example scenario on page 6. She will have spent $616.90 that year, approximately $52 per month, and received $1,216 by the end of the year. A slightly less conservative estimation is to say that Alice is an early adopter for 5% of those tracks. If she only receives the average payout, she would have spent $616.90 that year (≈$52/mo), and her annual accrual would be $6,160, a 9.98x ROI. These type of payout examples are what follow:

Track Scenario Two	Track Scenario Two	Track Scenario Two
Total Unique Tracks 6,167	**Total Unique Tracks** 6,167	**Total Unique Tracks** 6,167
Tracks with Avg Payout 1% (61)	**Tracks with Avg Payout** 5% (308)	**User in First Ten** 5% (308)
Expenditure $616.90 (≈$52/mo)	**Expenditure** $616.90 (≈$52/mo)	**Expenditure** $616.90 (≈$52/mo)
Annual Accrual $1,216	**Annual Accrual** $6,160	**Annual Accrual** $50,031.52
ROI 1.97x	**ROI** 9.98x	**ROI** 81.10x

The dollar weighted payout behaves differently from the purchase order weighted payout, and it has a tree shaped structure where users who contribute the most capital receive higher payouts. In equational terms:

$$\frac{x_k^2}{\sum_{i=1}^{n} x_i^2}$$

This denotes the dollar weighted payout for the kth user where n is the number of users, and x is a

user's contribution. A user might like to know how much money they need to contribute in order to at least break even in the dollar weighted payout. Given the default odds table, we can compute this with the following equation, given r represents the total shared revenue for the dollar weighted payout, and t represents the sum of all user contributions squared.

$$\frac{r - \sqrt{r^2 - 3.2t}}{1.6}$$