Sapien

Tokenomics

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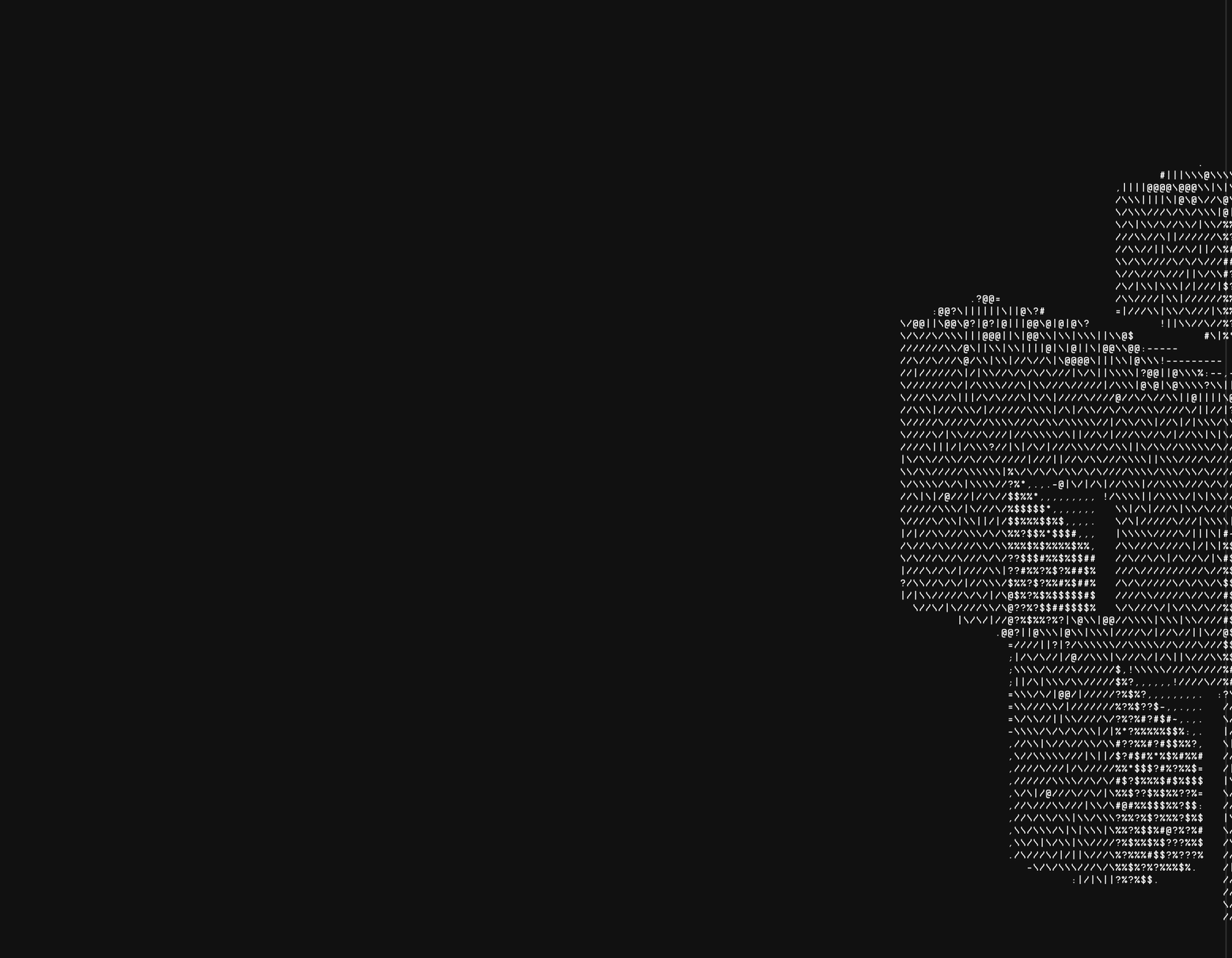
Proof of Quality: Sapien Protocol

Tokenomics and Incentive Design for Verifiable Human Training Data

Proof of Quality is a protocol for verifying human data at scale. Sapien replaces centralized QA with an incentive-aligned system for data creation, peer validation, and onchain reputation.

This paper outlines the economic, reputational, and governance mechanisms that underpin Proof of Quality.



0.0

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1.0 Introduction

Modern AI systems depend on human input to reach accuracy, reliability, and contextual fluency. From structuring datasets and verifying model outputs to providing the cultural insight and domain expertise that algorithms cannot infer, people remain essential to AI learning. Yet the infrastructure for coordinating and verifying this work is still fragmented, opaque, and difficult to scale.

Built as an open protocol and powered by the $SAPIEN token, Sapien allows anyone to contribute to AI development, prove the quality of their work, and earn based on performance. Beneath this accessible surface is a deeper mechanism: a financial architecture for enforcing data quality at scale.

Rather than relying on centralized QA teams, Sapien uses staking to introduce economic accountability, peer validation to distribute quality control, reputation to guide progression, and slashing to enforce standards automatically.

This structure transforms tokens from speculative assets into working capital. Contributors must stake in order to access work, and their rewards increase based on quality, consistency, and time in the system.

With ~1.8 million contributors registered, over 800,000 active participants, and more than 185 million tasks completed, Sapien has shown that high-quality data pipelines can be operated at scale through open, peer-enforced systems. The protocol is used across sectors including autonomous vehicles, robotics, medical and educational AI, and global development work with institutions such as the United Nations.

Sapien is a decentralized data foundry; a protocol that transforms collective human knowledge into verified training data for AI systems.

Sapien is designed to answer a foundational question for AI development: Who created this data, and how can we trust its quality?

2.0

Protocol Systems Overview

One of the central constraints in scaling AI training pipelines is quality assurance.

Traditional systems rely on manual reviewers, static heuristics, or crowdsourcing platforms that lack transparency and consistency. These approaches do not scale well with increasing data complexity or volume.

The Sapien protocol is designed to solve this constraint directly. It replaces centralized QA with a distributed enforcement system that uses financial incentives, peer validation, and performance history to maintain standards as the network grows.

The protocol enforces quality and coordinates participation through four integrated systems: staking, validation, reputation, and incentives.

1. Staking

Contributors lock tokens before completing tasks. This collateral enforces accountability and introduces real consequences for low-quality work. Stake size also determines access to higher-value tasks and reward multipliers.

2. Validation

Completed tasks are reviewed by more experienced peers. Accurate validators are rewarded. Those who approve poor work face penalties. This process distributes quality enforcement across the network, eliminating the need for a central QA team.

4. Incentives

Contributors are rewarded in $SAPIEN and $USDC based on task complexity, performance relative to peers, and the duration of their stake. Strong performance increases rewards and access. Poor performance results in slashing, reduced access, and slower progression.

3. Reputation

Each contributor builds a public performance record based on accuracy, task volume, and feedback. Reputation governs access to more complex work, eligibility for validator roles, and reward multipliers. Advancement is based entirely on demonstrated quality over time.

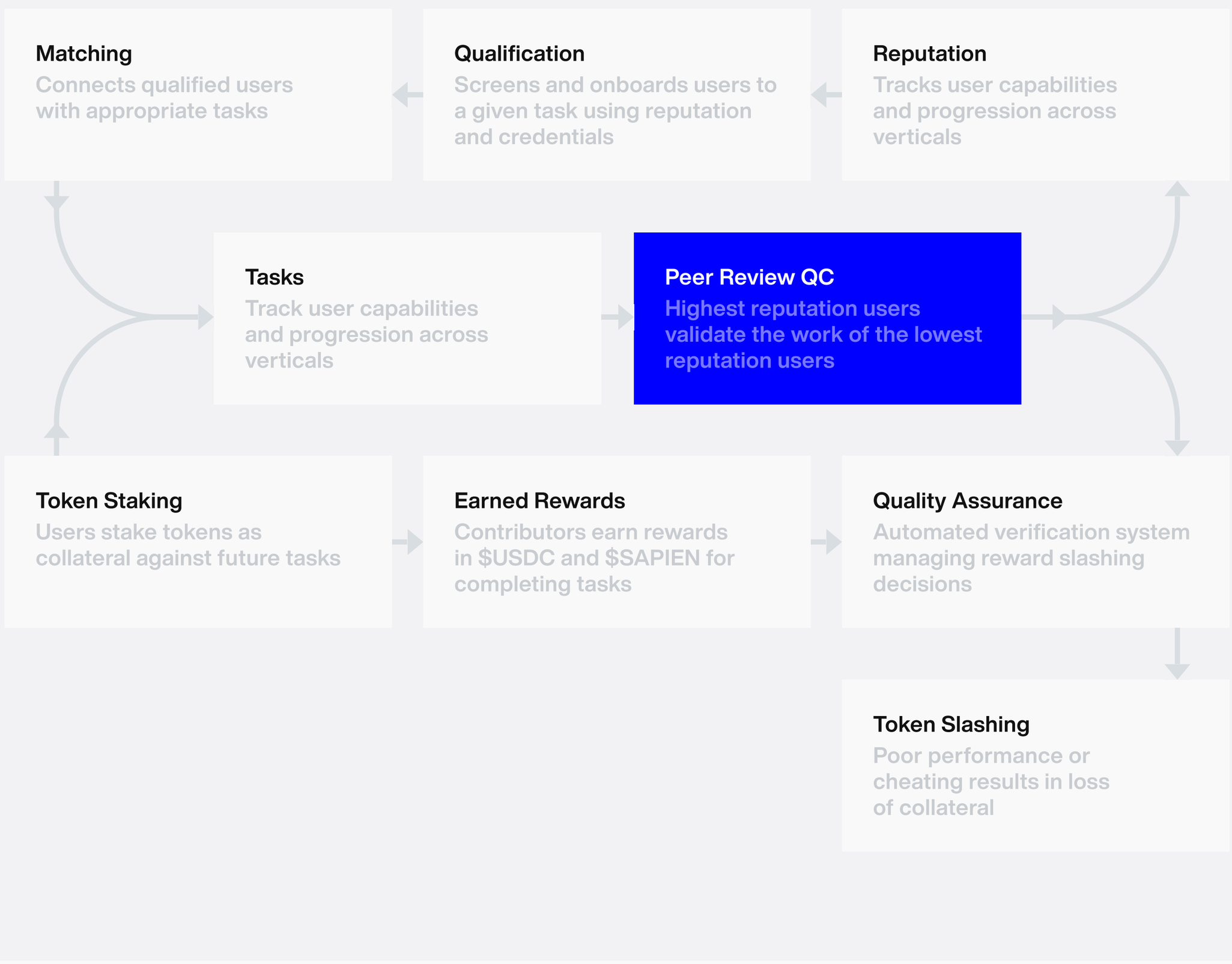
2.0 Protocol Systems Overview

Together, these systems replace centralized QA with a scalable enforcement layer.

What emerges is what the protocol defines as **proof of quality** — a performance-based signal of trust built through participation, validation, and financial alignment.

Diagram 2A

The Sapien Data Trust Loop
From Participation to Proof of Quality



2.1

Task Types and Use Cases

Sapien is designed to support structured data generation across a wide range of machine learning domains, far beyond general-purpose annotation. The protocol currently powers use cases such as:

Autonomous Systems

3D bounding box annotation, LIDAR segmentation, frame-to-frame object linking

Language Models

Multi-turn dialogue validation, chain-of-thought reasoning evaluation, RAG source vetting, alignment ranking, subjective judgment tasks

Robotics and Vision

Mesh repair, texture labeling, occlusion tagging

Safety and Governance

Misinformation detection, toxicity scoring, regulatory compliance checks

Tasks are submitted through client dashboards, managed service integrations, or APIs. Contributors either opt in or are dynamically matched based on their domain expertise and onchain reputation.

Contributor diversity ensures that models trained on Sapien-sourced data reflect real world nuance, cultural sensitivity, and high-quality human judgment.

3.0

Contributor Progression and Experience Levels

Contributors in the Sapien protocol advance through defined experience levels based on performance, consistency, and reputation. This structure allows the network to grow without sacrificing quality, while enabling new users to progress toward high-value work and validator responsibilities.

Reputation is calculated using task accuracy, task volume, and peer validation feedback. Scores range from 0 to 1000 and are updated continuously. As contributors move upward through levels, they gain access to more complex tasks, higher reward multipliers, and protocol-critical roles in validation.

Progression is non-linear and governed entirely by onchain performance. This enables a scalable, self-regulating hierarchy: new users learn through structured work, while experienced contributors enforce standards.

Trainee
Reputation 0-199

Contributor
Reputation 200–599

Expert
Reputation 600–799

Master
Reputation 800–1000

3.1 Experience Levels

Reputation 0-199

Trainee

This is the entry phase. Trainees focus on foundational skills, working under review from higher-ranked contributors. No stake is required, but quality must be maintained above 90%. Task volume is capped at 100 to ensure contributors demonstrate baseline consistency before progressing.

Reputation 200–599

Contributor

Contributors are trusted with routine tasks and begin to validate others. A minimum stake of 250 $SAPIEN is required, and contributors must maintain 95% task quality or higher. They are eligible for reward multipliers and begin participating in basic validation workflows.

Reputation 600–799

Expert

Experts are proven contributors with high accuracy and throughput. They are eligible for premium and specialized tasks and have full validation privileges for Trainee and Contributor work. A 5,000 $SAPIEN stake is required, and quality must exceed 98%. Experts may also form specialized validation pools and receive priority access to new task types.

Reputation 800–1000

Master

Masters are the highest tier in the contributor system. They act as lead validators for complex workflows, have access to all task types, and may play roles in protocol governance. The required stake is 25,000 $SAPIEN, and the minimum accuracy rate is 99%. Masters also receive the highest available reward multipliers.

4.0 Proof of Quality

Proof of Quality is Sapien's core contribution to the infrastructure of AI data. It is a structured signal of trust that emerges from contributor behavior, peer validation, and onchain financial alignment. When tasks require real-world expertise, we verify credentials. That includes doctors, engineers, lawyers, and other professionals. But we do not rely on institutional status alone to enforce quality.

Instead of clawing back earnings after the fact, which is a terrible way to treat contributors, Sapien uses onchain collateral and a transparent review process. Contributors stake before completing work. That stake remains in their control as long as the work meets expectations. Tasks are reviewed by peers with more experience in the same domain, not by anonymous QA teams.

Poor quality work results in both reputation loss and slashing. This means losing access to future tasks, and part or all of your stake.

The result is a system where quality is enforced through aligned incentives, transparent reputation, and distributed oversight.

This section outlines how Proof of Quality is implemented through four connected systems: staking, validation, slashing, and rewards.

4.1 Staking as Collateral

Before a contributor can complete complex tasks, they must lock a portion of their $SAPIEN tokens as collateral. This stake serves as a performance guarantee. If the task is approved through peer validation, the contributor earns a reward. If it fails, some or all of the stake may be slashed.

Stake size and duration determine access to task tiers and influence reward multipliers. This creates a system in which tokens function as working capital — participants are financially committed to the quality of their own output.

4.2 Validation by Peers

Each completed task is reviewed by a contributor with a higher reputation score. This tiered model enables decentralized quality enforcement:

- Masters validate Experts
- Experts validate Contributors
- Contributors validate Trainees

Critical tasks may require multiple validators. Validators earn additional rewards for accurate assessments.

Those who approve poor-quality work are penalized through slashing and reputation loss.

This peer-driven structure replaces centralized QA teams with a distributed system that scales with the network.

4.3 Slashing and Enforcement

When a task fails to meet quality standards, slashing is triggered. Contributors and validators may lose part or all of their stake depending on the severity and frequency of violations.

This escalation framework deters abuse while giving contributors a path to recover from isolated mistakes.

Table 4A

Violation Type	Consequences
Minor — Occasional low-quality task	Warning, retraining, or temporary restrictions
Moderate — Repeated issues or false validations	Up to 25% stake slashed, reputation penalty, requalification required
Severe — Malicious behavior or fraud	Up to 100% stake slashed, permanent removal from the protocol

4.4 Reward Mechanics

Contributor rewards are determined by three factors:

1. **Task value**
   based on complexity and specialization
2. **Performance ranking**
   based on contributor accuracy and consistency
3. **Staking configuration**
   based on both stake size and duration

Stake-Based Multipliers

Higher stakes and longer lockups earn progressively larger multipliers:

Table 4B

Stake Amount	30 Days	90 Days	180 Days	365 Days
250 $SAPIEN	1.004x	1.012x	1.025x	1.050x
500 $SAPIEN	1.008x	1.025x	1.049x	1.100x
1,000 $SAPIEN	1.016x	1.049x	1.099x	1.200x
1,500 $SAPIEN	1.025x	1.074x	1.148x	1.300x
2,000 $SAPIEN	1.033x	1.099x	1.197x	1.400x
2,500 $SAPIEN	1.041x	1.123x	1.247x	1.500x

Multipliers apply to each task reward and are calculated automatically at the time of reward distribution. Early withdrawal is possible after a 48 hour cool-down period, resulting in a **20% penalty** and forfeiture of all accrued multipliers.

4.4 Reward Mechanics

Performance Multipliers

Contributors who meet SLA thresholds receive a 1.0x performance multiplier. Those performing in the top 20% earn a 1.5x multiplier. Contributors below SLA may forfeit rewards and face slashing. All other contributors are ranked based on accuracy and SLA compliance.

1. **Top 20%**
   1.5x performance multiplier
2. **Meets baseline**
   1.0x multiplier
3. **Falls below threshold**
   No rewards, possible slashing

Example

A contributor who stakes 2,000 $SAPIEN for 180 days (1.197x stake multiplier) and ranks in the top 20% (1.5x performance multiplier) would earn:

Task reward × 1.5 × 1.197 = Total payout

For a 100-token task:
100 × 1.5 × 1.197 = 179.55 $USDC
Paid out in $SAPIEN and $USDC per section 4.5

Rewards are distributed via smart contract when claimed by contributors.

4.5 Reward Denomination and Payout Options

In addition to reward size, contributors can configure the denomination of their payouts. This flexibility supports a wide range of contributor preferences — from those seeking stable, fiat-linked earnings to those looking to increase long-term exposure to $SAPIEN.

By default, contributor rewards are paid in a combination of 80% stablecoins (e.g., $USDC) and 20% $SAPIEN. This structure balances near-term predictability with long-term protocol alignment. Stablecoin payouts allow contributors to treat Sapien as a reliable income source, while the $SAPIEN portion encourages network ownership, staking, and progression into governance roles.

Contributors may choose to adjust this ratio to suit their goals. The $SAPIEN payout portion can be increased to any value up to 100% in protocol account settings. Adjustments apply to future rewards only and are stored onchain.

All rewards, whether in stablecoins or $SAPIEN, are claimable via smart contract. Payouts are issued on a recurring schedule, typically weekly or task-grouped depending on contributor activity.

4.5 Reward Denomination and Payout Options

Example Reward Configuration Options

Table 4C

Stablecoin Portion	$SAPIEN Portion	Description
80% (default)	20% (minimum)	Balanced income and long-term protocol exposure
50%	50%	Mixed payout for contributors aligned with growth
0%	100%	Full alignment with $SAPIEN incentives and governance

This payout structure ensures that contributors can balance short-term income with strategic, long-term participation in the protocol — all without compromising liquidity or access to staking-based rewards.

4.6 System Outcome

Together, these systems generate what the protocol defines as **Proof of Quality**; a programmable, reputation-backed, and economically enforced signal of trust in human contributions.

This structure enables the Sapien network to grow without compromising the reliability required for AI model training.

Definition: Proof of Quality (PoQ);
a verifiable signal of trust, generated through contributor performance, stake-backed validation, and peer enforcement.

Reward Formula:

```
PoQ = T × M_p × M_s

Where:

   T   = Base task value
         (denominated in $USDC, paid out in $USDC and $SAPIEN per user settings)
   M_p = Performance multiplier
         (0, 1.0, or 1.5)
   M_s = Staking multiplier
         (based on stake amount and lock duration)
   PoQ = Final reward
         (proof of quality output, in $USDC and $SAPIEN)
```

This formula is applied automatically at each reward cycle.

4.7

Token Utility Loop

The diagram summarizes the cyclical role of $SAPIEN in the protocol's incentive and governance architecture.

This loop anchors long-term protocol utility and contributor alignment.

Diagram 4A

5.0

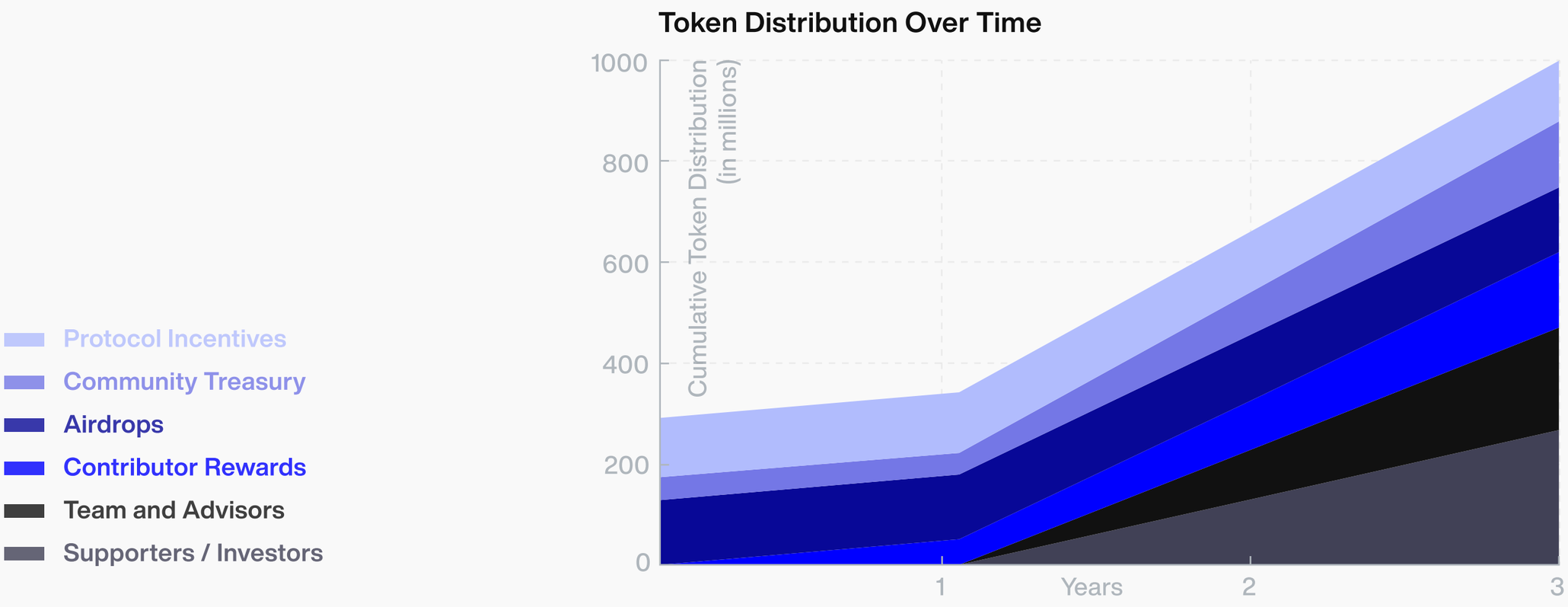
Token Distribution and Emissions

The $SAPIEN token has a fixed supply of 1,000,000,000 tokens, designed to balance early participation incentives with long-term protocol sustainability and contributor alignment.

The distribution is split across two primary categories:

47%
for Protocol Development Participants (contributors, builders, early supporters)

53%
for Contributor Incentives (task rewards, liquidity incentives, community treasury)



5.1

Distribution Breakdown

Table 5A

Category	% of Supply	Token Amount	Vesting Schedule
Seasonal Airdrops	13.00%	130,000,000	100% unlocked at TGE
Liquidity Incentives	7.00%	70,000,000	100% unlocked at TGE
Staking Incentives	5.00%	50,000,000	100% unlocked at TGE
Supporters / Investors	26.82%	268,161,963	12-month lock, 24-month linear vest
Team & Advisors	20.18%	201,838,037	12-month lock, 24-month linear vest
Contributor Rewards	15.00%	150,000,000	36-month linear vest
Community Treasury	13.00%	130,000,000	36-month linear vest

5.2 Emissions Schedule

Token emissions follow a staged release model to ensure early liquidity and long-term contributor alignment:

Phase 1 — Foundation
Months 1–12

- Seasonal airdrops, liquidity incentives, and staking programs go live
- Contributor rewards begin linear distribution
- Team and investor tokens remain locked

Phase 2 — Growth
Months 13–36

- Seasonal airdrops
- Emissions scale with contributor activity
- Governance begins to transition to token holders
- Community treasury becomes active

Phase 3 — Maturity
Post-Month 36

- All vesting completes
- Full community governance
- Emissions rate stabilizes
- Protocol steered through onchain proposals

5.3 Allocation Principles

There is no token inflation beyond the initial 1B supply. Scarcity is preserved through the protocol's built-in demand mechanisms: staking, slashing, and working capital requirements for access.

The token distribution is designed to:

Incentivize early participation
Through seasonal airdrops and staking bonuses

Reward long-term contribution
Via linear vesting

Ensure operational stability
With liquidity and treasury reserves

Align team, investor, and contributor incentives
Under a fixed cap

6.0 Supply Management and Treasury Design

The $SAPIEN token has a fixed maximum supply of 1,000,000,000 tokens. There is no inflationary minting, and the protocol includes mechanisms to reduce circulating supply over time through contributor behavior and DAO-governed treasury flows.

6.1 Penalty Flows and Treasury Accumulation

The protocol applies penalties under two conditions:

Early unstaking
triggers a 20% fee (after 48hr cooldown)

Slashing
removes stake for low-quality or malicious activity

These penalties are sent to a protocol DAO treasury. They are not distributed to investors or core team members.

This model ensures that quality enforcement and contributor discipline directly benefit the broader ecosystem, without introducing security-like dynamics.

6.2

DAO-Governed Use of Protocol Revenue

A portion of protocol revenue from enterprise data requests, and related services is allocated to the DAO treasury.

The DAO may decide how to deploy this capital via onchain governance. Example uses include:

- Grants to support contributors or tooling
- Community incentive programs
- Token purchases for redistribution or burning
- Liquidity provision or strategic reserve formation

Importantly

There is no automatic burn mechanism, no protocol-level redistribution to token holders, and no implicit or contractual linkage between protocol revenue and token price. All treasury actions are subject to community governance.

6.3

Transparency and Oversight

All treasury flows and spending are auditable onchain. Public dashboards will provide:

- Real-time penalty and fee flow tracking
- Treasury balance and spending proposals
- Voting participation and governance records

The treasury's goal is to support long-term protocol development, contributor alignment, and economic sustainability; all under transparent community oversight.

7.0 Referral Program and Network Growth

The Sapien protocol is designed to grow organically through high-quality contributor participation. To accelerate that process, it includes a tiered referral program and a broader set of incentives focused on geographic expansion, domain expertise, and strategic partnerships.

These growth mechanisms reinforce the protocol's core goal: to build a permissionless global network of qualified contributors delivering high-integrity data.

7.1 Referral Program

Contributors can earn a share of protocol rewards by referring others to the network. Rewards are **based on the quality and volume of the referred contributor's work**, not just signups.

Table 7A

No. of Referred Users	Reward (% of Referral's Earnings)	Max Duration
1–2	1%	12 months
3–5	2%	12 months
6–10	3%	12 months
11–20	4%	12 months
21+	5%	12 months

1. Rewards are paid in $USDC and $SAPIEN tokens
2. Only validated, quality-assured work is eligible
3. Referred contributors must meet minimum standards to qualify
4. Referral bonuses are distributed alongside standard contributor payouts
5. No additional emission is introduced — referral rewards are carved from existing task pools

7.2 Quality Safeguards

To maintain integrity, referral rewards are linked to actual output quality:

- Referred contributors must reach a baseline reputation score and accuracy threshold
- Low-quality or inactive referrals do not generate earnings
- Accounts flagged for fraud or Sybil activity are disqualified retroactively

This ensures that the referral system scales contributor volume without compromising protocol standards.

7.3 Broader Growth Strategy

The referral system is one part of a broader set of tools to scale the network responsibly:

Strategic Partnerships

- Collaborations with aligned protocols and data providers
- World ID and other proof-of-personhood integrations
- Cross-protocol credentialing and trust portability
- Integration with task-based labor platforms (e.g., freelance and micro-work marketplaces) to onboard qualified contributors, at scale, and programmatically reward and incentivize participation through native protocol mechanics.

Regional Expansion

- Localized onboarding flows, language support, and tasks
- Partnerships with regional coordinators and community builders
- Region-specific task pools that leverage cultural or domain expertise

Skill and Domain Development

- Specialized training programs with verifiable credentialing
- Higher task rates for contributors with validated qualifications
- Long-term progression pathways tied to professional expertise

8.0

Governance and Risk Mitigation

The Sapien protocol is designed to operate without centralized control, while preserving enterprise-grade quality, transparency, and security. This is achieved through progressive decentralization of governance and a layered approach to risk management across the technical, economic, operational, and regulatory dimensions of the network.

8.1

Governance Structure

Governance of the Sapien protocol is expected to shift gradually toward token holders as the network matures. In its early phases, core development is led by the founding contributors. Over time, responsibility for critical decisions will transition to a decentralized autonomous organization (DAO).

Governance Responsibilities

- Treasury allocation and grant approvals
- Protocol parameter adjustments (e.g. slashing severity, reward weights)
- Whitelisting new task types or verticals
- Proposals for upgrades or system migrations
- Onboarding or removal of core contributors

All governance actions are expected to be executed via onchain voting and tracked transparently.

Governance rights are expected to be tied to $SAPIEN holdings, subject to participation thresholds and evolving delegation mechanics.

8.2 Risk Domains and Mitigation Strategies

Technical Risk

- All core contracts are independently audited prior to deployment
- Upgradeability is gated through multisig and community delay windows
- A bug bounty program incentivizes white-hat reporting
- Real-time monitoring and DDoS protection support infrastructure stability

Operational Risk

- Protocol metrics are publicly accessible and continuously monitored
- No centralized moderation or approval required for task access (beyond quality gating)
- Contributor queues, validator assignment, and task routing are fully automated

Economic Risk

- All staking and reward mechanics are designed to balance flexibility with accountability
- Escalating slashing protects against protocol abuse
- Incentives are parameterized and can be adjusted via governance
- No inflation or hidden emissions reduces long-term distortion

Regulatory Risk

- $SAPIEN is designed as a utility token for task access and performance-based rewards
- Protocol revenue is routed to a DAO treasury, not token holders
- No burn-from-revenue mechanism exists at the protocol level
- Contributors are paid for work performed, not for holding or staking alone

8.3 Ongoing Oversight

To ensure long-term trust and resilience, the protocol commits to:

- Regular security audits and published risk reviews
- Transparent community metrics dashboards
- Treasury reports and governance transparency tools
- Engagement with third-party legal, operational, and security advisors

9.0 Conclusion

The Sapien protocol introduces a new standard for sourcing, validating, and rewarding high-quality human data. Rather than relying on centralized reviewers or opaque heuristics, Sapien enforces quality through structured incentives, peer validation, and transparent, performance-based progression.

By introducing **Proof of Quality** as a verifiable signal of trust, the protocol unlocks the ability to scale contributor networks without compromising reliability; a fundamental requirement for AI systems that depend on human input.

Whether annotating multimodal datasets, verifying LLM outputs, or contributing domain-specific expertise, Sapien creates permissionless infrastructure for individuals to participate in AI development, and to be compensated fairly based on the quality of their work.

With a fixed-supply token, contributor-aligned distribution, and decentralized governance over time, the protocol is designed for long-term resilience and global participation.

As AI systems continue to evolve, the need for verified, structured human data will only grow. Sapien exists to meet that need: at scale, and without compromise.

10.0 Glossary

Table 10A

Term	Definition
$SAPIEN	The native token of the protocol, used for staking, rewards, and governance
Proof of Quality	A verifiable signal of trust generated through staking, validation, and reputation
Collateral	Tokens staked by contributors as a guarantee of work quality. Returned upon successful task completion.
Staking	Locking tokens as collateral to access tasks and earn multipliers
Staking Multiplier	The reward boost contributors earn based on the size and duration of their stake. Longer commitments and larger stakes unlock higher multipliers, applied automatically to each task payout.
Slashing	Loss of staked tokens due to poor performance or validation errors
Slashing Severity	The scaled penalty system Sapien uses to respond to low-quality work or malicious behavior. Minor issues may trigger warnings, while repeated or severe violations can result in full stake loss and removal from the protocol.
Reputation	Onchain score tracking contributor accuracy, consistency, and task history
Validator	A contributor who reviews the work of others based on earned reputation
Validation Pool	A set of contributors assigned to review work submitted by lower-reputation peers.
Task Tier	The classification of work based on complexity, specialization, and access level
DAO	A decentralized autonomous organization controlled by token holders
SLA	Service Level Agreement — accuracy and response standards required for task rewards
TGE	Token Generation Event — the initial public release of $SAPIEN