Story

A Peer-to-Peer Intellectual Property Network

Story Foundation

Abstract

We propose *Story*, a peer-to-peer intellectual property network that creates a programmable market for knowledge and creativity. Scientific and creative assets are registered on a universal ledger with customizable usage parameters. All assets are equipped with a composable interface that can be consumed by any software application or artificial intelligence model, allowing intellectual property to be used and monetized across the internet. A network-wide graph coordinates all intellectual property assets, with nodes representing atomic assets and edges representing the legal and economic commitments between them. The network evaluates the uniqueness of each asset via an asynchronous and decentralized validation service driven by cryptoeconomic incentives. Participation in the protocol contributes to the growth of the only open and permissionless repository of the world's knowledge and creativity.

1 Introduction

Intellectual property (IP) has come to rely almost exclusively on centralized intermediaries to coordinate ownership and value. The production and exchange of intelligence across all disciplines is taxed at the hands of a few unaccountable entities — ranging from social platforms to pharmaceutical companies — which increases the transaction costs for intellectual property. In addition, the traditional system can no longer compete with the reality of artificial intelligence, in which ideas can be created and distributed at scale with vanishing marginal costs. Individuals find their creative output scraped to train models without attribution and compensation, and AI companies themselves cannot feasibly generate hundreds of millions of individual licensing agreements. There exists neither legibility nor liquidity in the marketplace of ideas.

What is needed is an open and programmable market for peer-to-peer intellectual property exchange. We propose Story, a peer-to-peer intellectual property network. Any two willing individuals can trade, extend, and monetize their ideas directly on Story without interference from rent-seeking intermediaries. Programmable terms set by owners are embedded within each intellectual property asset as it is monetized and exchanged across any software application on the Story network, generating yield for its owner across the internet. Story provides both the universal repository and the programmable market for intelligence needed to increase the intellectual output of humanity.

2 Architecture Overview

Blockchain technologies have evolved in distinct waves. Bitcoin [1] introduced the first decentralized ledger. The Ethereum network [2] transformed this concept into a general-purpose computing platform, unlocking new asset types like non-fungible tokens. When faced with significant scalability challenges, blockchains such as Solana [3] emerged to address these limitations. However, while focusing on the Scalability Trilemma — the trade-off between decentralization, scalability, and security — the applicability and usability of blockchains was overlooked, creating a barrier to mainstream adoption. This demands the rise of a new type of blockchain: purpose-built blockchains designed to address real-world challenges, creating programmable markets for new and complex asset types.

Story is a purpose-built decentralized blockchain supercharged by a *multi-core* execution environment. It comprises a main execution core alongside multiple highly customized cores. The main core provides EVM equivalence, enabling rapid adoption of existing applications from the ecosystem. The Intellectual Property (IP) core, one of the specialized cores, efficiently handles intellectual property registration as a native asset class while optimizing operations across complex IP relationship graphs. This core transforms intelligence into programmable IP assets. Although Story focuses primarily on intellectual property, its flexible architecture enables the adoption of future cores that can expand far beyond IP-related applications.

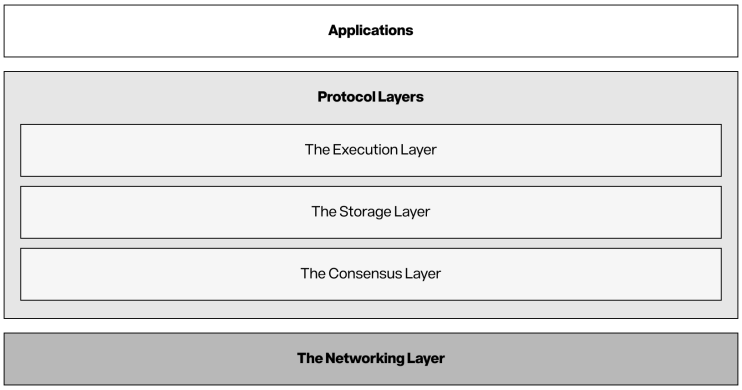

Figure 1: Story's Protocol Layers

Story runs on a decentralized set of nodes (or validators) connected through a peer-to-peer network layer. These nodes work together to maintain consensus, process transactions, and protect the integrity of the chain, creating a secure decentralized network open to all participants who follow the rules of the protocol. Following the principle of separation of concerns, the protocol is divided into three layers: an execution layer, a storage layer, and a consensus layer.

2.1 The Execution Layer

The Execution Layer serves as the computational foundation of the network, handling the execution of all transactions and smart contracts. It is powered by a main core and several specialized cores working in harmony. This layer is designed to deliver maximum flexibility and computational power to each core while preserving network integrity and liveness.

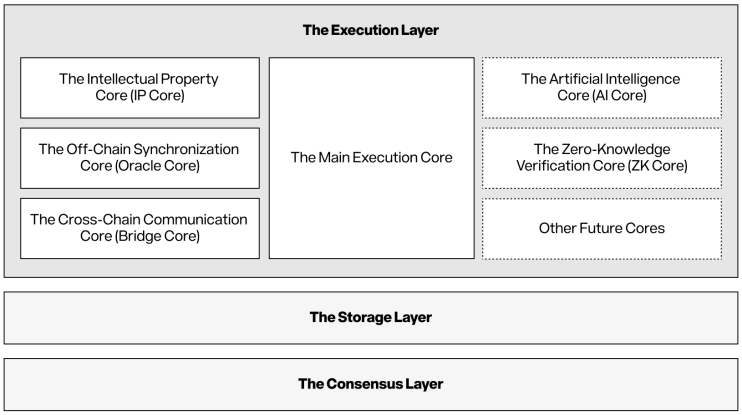

Figure 2: The multi-core design of the execution layer

The main core functions as the default execution environment, providing complete EVM compatibility. The main core processes all transactions and activates specialized cores whenever a transaction calls contracts within those cores. Each specialized core is an optimized execution environment that prioritizes specific requirements such as speed, scalability, safety, or privacy. For instance, the way in which data is modeled, stored and processed in certain applications can directly impact its scalability and even its feasibility. The complexity of the multi-core design is invisible to users, since each specialized core exposes its functionality through smart contracts that automatically engage when users interact with their associated contracts. All cores must comply with the following requirements:

- **Determinism**: The outcome of the execution of any method call must be deterministic. For example, while a core might use GPUs for fast floating-point operations internally, the final result must always be consistent. Nondeterministic behavior jeopardizes the network's integrity and liveness.
- **Bounded and measurable resource consumption:** Each core must accurately calculate the expected resource consumption (gas costs) in advance and in constant time for all contract calls based on their input parameters. Improper metering compromises network liveness and fair usage.
- **Storage:** Each stateful core can store data as key/value pairs in its namespace within the storage layer, where data commitments are constructed for consensus. All key/value pair updates must follow a canonical format, and their order must remain deterministic.

The first release of Story deploys three specialized cores alongside the main core to address distinct needs: One core handles storage and operations for IP as a native asset class, another connects the onchain execution environment to the offchain world, and a cross-chain communication core enables IP asset usage across the broader blockchain ecosystem.

The Intellectual Property Core

Intellectual property assets are represented on Story as multifaceted graphs in which various types of nodes (IP assets, licenses, etc) are connected through edges representing economic and legal relationships. These IP graphs track rights, licensing, and monetization across both original and derivative assets.

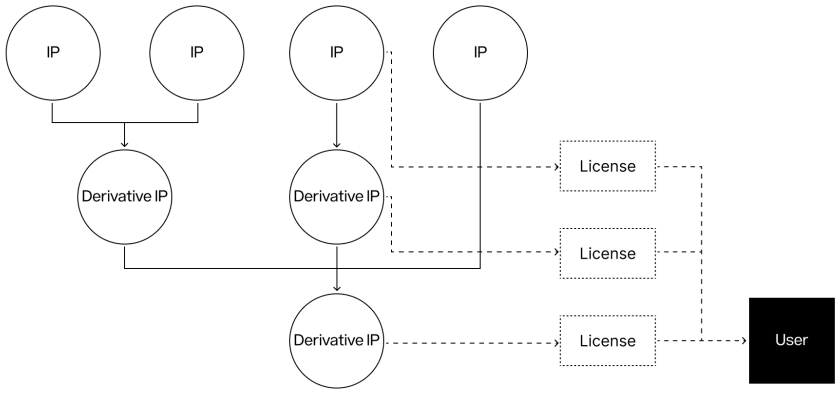

Figure 3: An example graph of IP assets

Deployed on the IP core, *the Proof of Creativity (PoC)* protocol is a natively enshrined protocol that provides both an open IP repository and a set of modules to interact with those IPs in a frictionless way. PoC is at once a standardized, universal ledger for IP assets across Story *and* a way to create digital markets around those assets as well as their rights. PoC traces the genealogy of IPs as they are used, expanded, and monetized across applications. Just as Git enabled the tracking of code through branching and versioning, this open repository makes Story the provenance and exchange layer for IP.

IP owners can register their intellectual property and use PoC modules to define usage terms and royalty structure. Each intellectual property can be registered onchain as an IP-Asset (ERC-721) with an optional associated IP Account (a modified ERC-6551). Off-chain entities monitor registrations, validate IP holders' identities, provide attestations for registered IPs and their licenses, and can initiate a decentralized dispute process if infringement occurs. See Appendix A for more details on the PoC protocol.

The IP core supports PoC by providing native, efficient storage for IP-related assets, licenses, and attestations through optimized data models for intellectual property relationship graphs. The IP core also offers efficient native implementations for complex graph operations like traversals, which would otherwise be time-consuming and computationally expensive. For

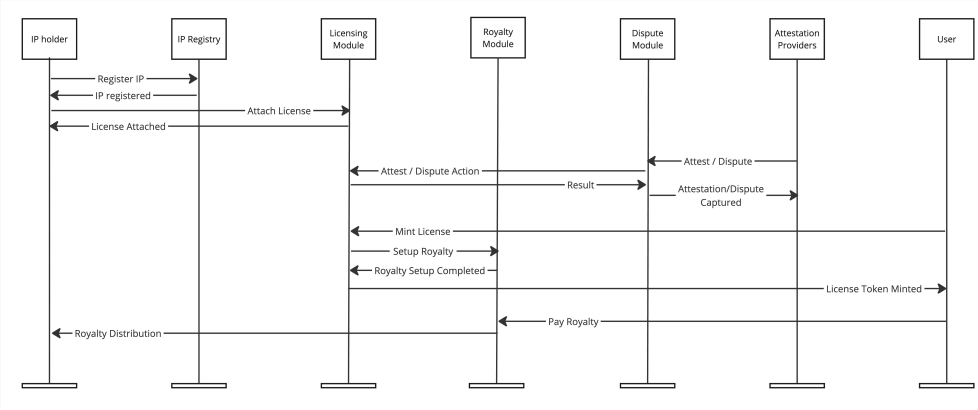

Figure 4: IP registration and utilization flow diagram (basic happy path)

example, when establishing a new relationship between a user and an IP asset, the protocol must verify compatibility by checking IP parameters and all ancestor assets to ensure consistent rule enforcement. The IP core uses advanced algorithms to efficiently navigate the graph and apply a universal compatibility engine for IP terms. Implementing such capabilities is impractical on other Layer 1 or Layer 2 blockchains without such specialized execution cores.

The Offchain Synchronization Core

Oracles serve a vital role in broader blockchain ecosystems, allowing these otherwise isolated systems to connect with real-world data and services. Without oracles, blockchains could only process information that exists onchain, severely limiting their practical applications. The offchain synchronization core establishes native infrastructure for seamless and reliable oracle integration.

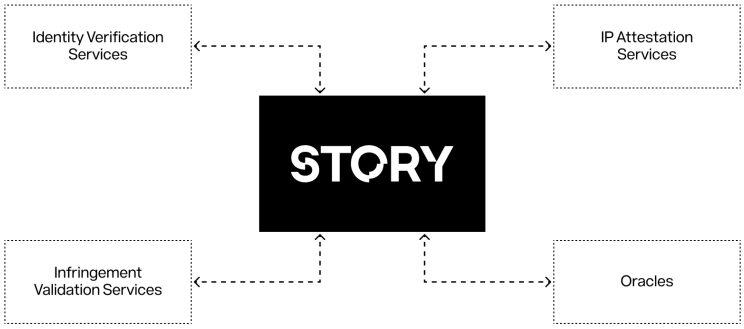

Figure 5: The offchain synchronization core facilitates integration of oracles and other data providers

One of the services deployed at this core is *Story's Orchestration Service (SOS)* framework. This service extends the Proof of Creativity protocol by attesting to the authenticity of registered IP assets and licenses, verifying the social identities of creators, receiving offchain payment, and generating legal contracts for offchain usage. The SOS bridges the gap

between offchain realities and the onchain world through a network of offchain entities that provide attestations for essential services on Story.

The Cross-Chain Communication Core

The cross-chain communication core provides efficient primitives for cross-blockchain message passing. Supported by this core, the Inter-Blockchain Communication (IBC) protocol[4] is an example where implementation as an EVM smart contract is impractical due to the computational cost of validating proofs (e.g. Merkle proofs) and verifying signatures.

Supporting cross-chain communication capabilities facilitates broader ecosystem interoperability, eliminates value segmentation barriers, and enables numerous applications. For example, IP holders can leverage their IP assets across different blockchains, accessing various marketplaces, platforms, and services while maintaining consistent ownership coordination and monetization terms. Or users can use their IP assets as collateral on DeFi-focused blockchains. This interconnected approach ensures that IP ownership remains enforceable regardless of where the assets are being utilized, achieving Story's vision of being an IP layer for the entire internet, regardless of the execution environment.

Future Core Extensibility

Story's architecture supports adding new specialized cores, allowing the blockchain to expand beyond intellectual property capabilities. Let's take a closer look at two possible future cores.

The **Artificial Intelligence (AI)** core could optimize and streamline AI-related onchain operations. Implementing such operations within the EVM is infeasible by default—as reported in the paper[5], even a simple task like naïve multiplication of two square matrices of 1000 x 1000 integers would cost over 3 billion gas, which far exceeds the logical block gas limit. This core can leverage modern GPU integer processing by utilizing deterministic fixed-point arithmetic, quantization techniques[6], and an onchain pseudo-random generator to address concerns about nondeterministic behavior from randomness and floating-point errors.

The **Zero-Knowledge (ZK)** core could enable efficient verification of zero-knowledge proofs such as ZK-SNARKs. Zero-knowledge proofs are used in cryptography to allow one party (the prover) to prove to another party (the verifier) that they possess specific knowledge or information without revealing the actual information itself. By providing native support for ZK-proof verification using a highly optimized software stack or hardware acceleration, the core reduces computational overhead and gas costs compared to implementing these operations in smart contracts. The core is particularly valuable for applications requiring confidential IP exchanges or verifiable IP graphs of massive scale. For example, it can enable IP owners to prove ownership or authenticity of their IP assets without exposing sensitive details.

2.2 The Storage Layer

This storage layer sits on top of the consensus layer and exposes storage APIs to the execution layer and its cores. It abstracts away the complexities of data organization, constructing cryptographic commitments over the data as well as the choice of database. A central design principle draws inspiration from the NAND Flash Translation Layer (FTL), which maps logical addresses to physical storage blocks to optimize write performance and extend device lifespan. Similarly, the storage layer implements data placement strategies to balance performance, scalability, cost, proof size and redundancy across heterogeneous storage systems. By analyzing usage patterns and access frequencies, the storage layer can proactively optimize data placement across different storage tiers. The storage subsystems automatically adjust to handle various data types efficiently, adapting based on their size, how often they're accessed, and durability requirements.

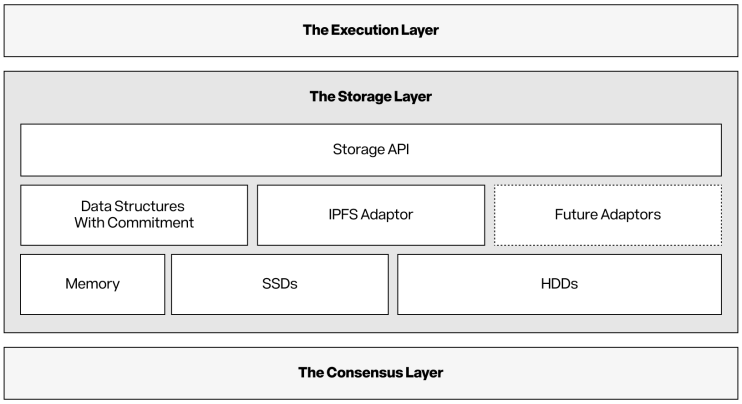

Figure 6: Story's storage layer

Beyond the performance gains, this layer also boosts the user experience by offering a unified interface that integrates both onchain and offchain storage solutions like IPFS[7] and Arweave[8], eliminating user experience fragmentation. Intellectual property assets manifest in a diverse array of formats and sizes, from small text documents to large multimedia files and complex datasets. Storing large amounts of data onchain is expensive. The conventional approach when interacting with large datasets has been to store the content on IPFS and maintain only metadata references onchain; this methodology often introduces significant limitations that degrade the user experience. For instance, when an ML model is registered as an IP asset, its metadata capturing content authenticity (e.g. C2PA[9]) is stored alongside the actual file, enabling direct model inference when needed. It's crucial to note that the underlying protocol handles all this complexity to ensure the interface's behaviour remains deterministic and doesn't compromise the network's liveness. The technical details are beyond the scope of this document and will be released in a follow-up technical paper.

2.3 The Consensus Layer

The consensus layer ensures network integrity, security, and stability by orchestrating block formation among all network participants. Recent years have witnessed remarkable advances and research breakthroughs in blockchain consensus mechanisms. This layer is designed to remain adaptable, allowing it to incorporate new consensus mechanisms as they emerge.

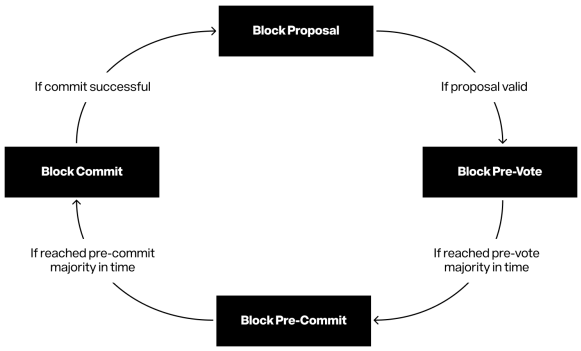

Figure 7: Tendermint's block formation cycle (the happy path)

The initial release of Story uses a modern, performant implementation of Tendermint called CometBFT[10]. Tendermint[11] is a Byzantine Fault Tolerant consensus engine that offers well-defined properties and customization options that align with our design needs:

- **Fault Tolerance:** maintaining security even when 33% of validators are malicious or offline. The system ensures all honest nodes reach consensus on committed blocks and uses cryptographic proofs to identify and penalize bad actors.
- **Liveness Guarantees:** The network continues to progress when more than two-thirds of validators (measured by voting power) remain active and participating.
- **Instant Finality:** Transactions achieve finality quickly after being included in a block. This immediate finality ensures reliability for applications needing immutability - a key factor in user experience.
- **Modular Design:** The Application Blockchain Interface (ABCI) decouples consensus from execution, enabling future consensus upgrades without impacting execution.

The consensus layer of Story uses a Proof-of-Stake (PoS) mechanism, with validators playing a crucial role in maintaining blockchain security and integrity. This creates a direct economic incentive for an honest and efficient operation, as malicious behavior results in penalties, including loss of staked tokens. The layer manages all operations related to staking, lockup requirements, and reward distribution.

3 Applications

Looking beyond Story's technical architecture, we can begin to examine potential use cases for a peer-to-peer IP system. The presence of a universal IP repository and a programmable market for intelligence could mark the start of a new Renaissance. This section explores some of the most promising applications. There are certainly many more equally exciting applications that are omitted.

3.1 A Universal Market for Intelligence

Since Bitcoin and Ethereum revolutionized money in prior decades, little work has been done to truly adapt blockchains for new asset classes beyond currencies. Unstoppable digital markets are the killer application of blockchains, and purpose-built blockchains will create entirely new markets starting with IP.

Traditional IP systems rely on complex centralized structures and intermediaries, creating inefficiencies in the legibility, exchange, and monetization of a multi-trillion dollar asset class. The high transaction costs of this inefficient market prevent knowledge and creativity from generating value and limit the exchange of ideas. Story removes these barriers by enabling peer-to-peer IP transactions via programmable IP.

Applications can onramp existing IP catalogs from pharmaceutical companies or media institutions onto Story as IP RWAs (Real World Assets). More exciting, natively programmable IP can compose with DeFi applications in an emerging field of IPFi, where IP assets can be fractionalized, used as collateral, staked upon, or otherwise leveraged in economically productive ways.

Human-to-human interactions are simply the most basic transaction in the new intelligence economy. Agent-to-human interactions are made possible via Story's programmable execution environment, wherein agents can autonomously license IP assets from Story and upgrade their creative style or knowledge base via fine-tuning. If revenue is generated, agents can share a portion of that revenue with the original IP holder via Story's royalty module, creating a positive economic exchange where AI can empower IP holders rather than endangering their earnings. Purely agent-to-agent IP exchanges are also viable, allowing an entire marketplace of agent interactions to flourish with Story as the settlement layer for agentic commerce. We will cover this possibility in more detail in the following section.

3.2 A Foundational Layer for Artificial Intelligence

Blockchains are the perfect substrate for AI interactions as they offer a programmable medium in which software can make hard commitments. Because agents are trained upon IP as their native inputs and produce IP as their native outputs, Story offers a foundational settlement layer for AI transactions both for training AI models and for monetization of AI outputs.

Chain of Intelligence

In the AI field, intellectual property assets encompass various forms of IP — from datasets and foundation ML models to fine-tuned models and model tuning packages.

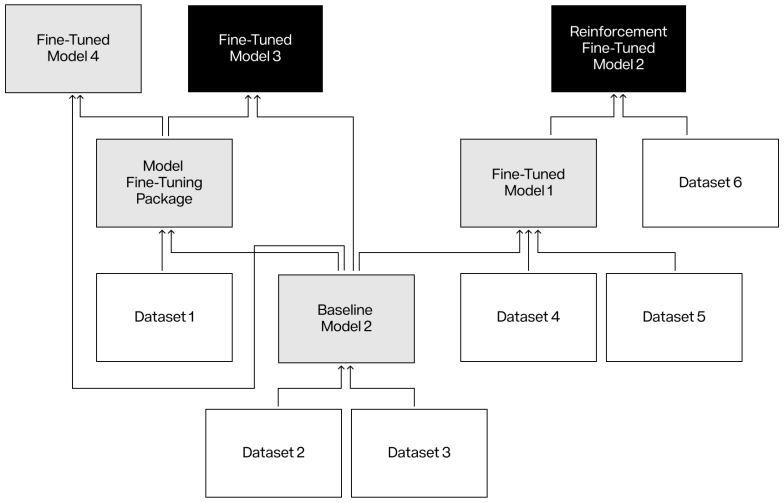

Figure 8: An example graph of AI-related IP assets

Figure 8 illustrates how IP assets form a chain of intelligence. A machine learning model (Model 2) may originate from a fine-tuned deep model (Model 1) that was enhanced through reinforcement learning using another dataset (Dataset 6). The fine-tuned deep model itself could be derived from a base model trained on multiple datasets. These training datasets may also be combinations of other datasets. Furthermore, there has been active research recently in developing standalone model fine-tuning packages. A model fine-tuning package contains all the necessary data for parameter-efficient model fine-tuning, which reduces trainable parameters while maintaining performance close to full fine-tuning. Since full model fine-tuning requires significant computational resources and memory, these packages offer an efficient alternative (i.e. Huggingface Adapters). State-of-the-art model fingerprinting techniques, such as OML, developed by the Sentient Protocol[12], can be used to capture the unique characteristics and essential attributes of a model when registering it as an IP asset on-chain.

Registering the entire chain of intelligence on Story enables for a genealogy of economic value that distributes revenue across the entire graph when it is generated at any single node. Story forms the basis for a market of high-quality datasets and model fine-tuning packages that leads to more performant ML models. This incentive structure encourages data providers to contribute high-quality datasets by guaranteeing fair compensation, which creates a flywheel for rapid AI progress. With transparent economic incentives and automated revenue distribution, Story becomes the negotiation, collaboration and settlement layer for a sustainable ecosystem where data providers, model developers, and end users work together seamlessly — all while maintaining proper attribution.

Agentic Commerce

AI is evolving from standalone models to networks of autonomous agents that can sense, decide, and act to achieve goals. This represents a shift from viewing AI as just a tool to seeing it as an ecosystem where agents collaborate and generate value through their interactions.

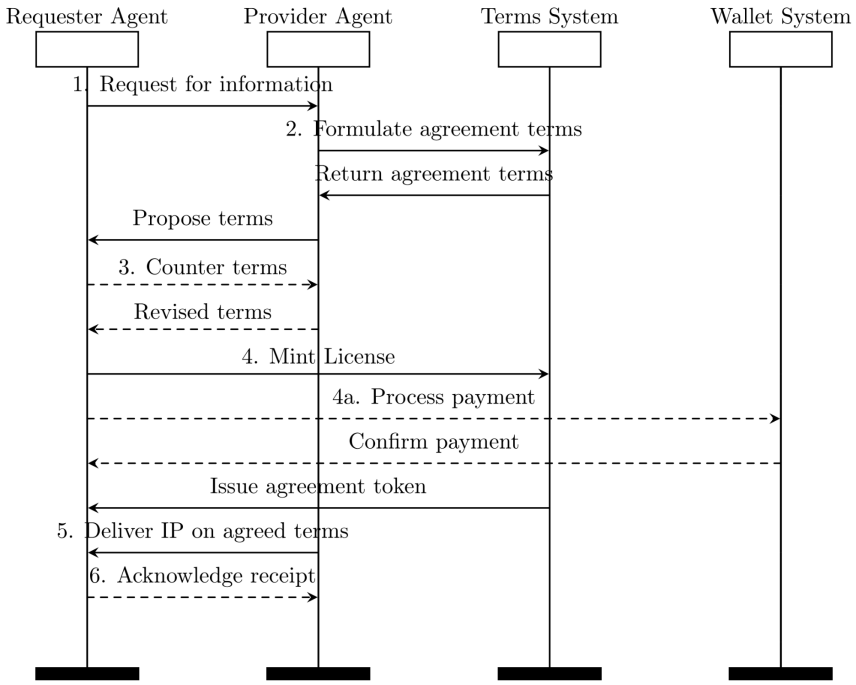

Figure 9: Agent TCP/IP protocol – interaction flow [13]

Published by the Story team, the Agent Transaction Control Protocol for Intellectual Property (Agent TCP/IP)[13] represents an important framework in the evolution of autonomous agent ecosystems. Agent TCP/IP is designed to facilitate standardized, autonomous interactions between AI agents. This agent-to-agent protocol establishes the foundational infrastructure for the seamless exchange between agents of IP assets, such as training data, proprietary algorithms, and creative content, without the need for human intermediaries. Agent TCP/IP enables agents to autonomously negotiate, license, and enforce agreements through onchain, agent-to-agent smart contracts that integrate both onchain execution and offchain legal enforceability, all powered by Story. Agent TCP/IP lays the groundwork for a future where agents act as autonomous economic actors, improving themselves by licensing training data and monetizing their outputs by registering their IP. As more agents join the network, the value and capabilities of the entire ecosystem grow exponentially. Each new agent brings unique capabilities and can combine its strengths with existing agents to create novel solutions and services. For example, specialized agents could work together to produce a movie, wherein a producer agent hires screenwriter agents and video generation agents and splits revenues according to their onchain agreements.

3.3 IP Token

Story's native token, *IP*, coordinates all flows of value across the peer-to-peer intellectual property system.

The *IP* token functions as the network's underlying medium of exchange. *IP* enables efficient transaction processing and fair resource allocation through transparent fee payments whenever intellectual property assets are used, exchanged, or generate revenue. The token facilitates direct peer-to-peer transactions without intermediaries, serving both as a utility and value exchange medium to strengthen the network's economy.

Also, because Story uses PoS consensus, validators stake *IP* as collateral to maintain network security. Validators process transactions and maintain blockchain integrity, receiving rewards denominated in *IP* based on their performance. This creates strong incentives for validators to operate honestly and efficiently since they have a direct stake in the network's success, and cements *IP* as the foundation of Story's security.

Within the broader ecosystem, *IP* is designed to serve an even more critical role, securing intellectual property assets, serving as the currency for intellectual property revenue flows, and even offering a native medium of exchange for AI agents settling their intellectual property on Story. The Proof of Creativity protocol, along with other specialized protocols deployed on the intellectual property core, rely on *IP* as their operational foundation. *IP* facilitates all value transfers within the intellectual property core, including royalty distributions, licensing fees, and usage-based compensation. This integration means that *IP*'s role extends beyond basic network security — it serves as the cornerstone for safeguarding and validating all intellectual property assets registered on Story. Moreover, the Agent TCP/IP protocol leverages *IP* to provide both a robust security layer for inter-agent communications and a native mechanism for efficient value exchanges between agents. This dual functionality ensures that AI agents can communicate effectively while engaging in economic transactions in a trustless, automated manner.

The *IP* token serves as a unified utility token for both network security and ecosystem functions, integrating network operations with the broader intellectual property market. As the gas, staking, and utility token of Story, *IP* plays a central role in incentivizing diverse actors in the Story ecosystem to maintain and grow a peer-to-peer intellectual property system.

Conclusion

We have proposed a peer-to-peer system for intellectual property that does not rely on centralized institutions. The Story blockchain offers a purpose-built network that creates both a universal repository of intellectual property assets and a programmable market for exchanging them. Story's multi-core architecture offers the extensibility and specialization needed to accommodate an evolving ecosystem of application integrations and artificial intelligence use cases. A network-wide intellectual property graph embedded natively into the blockchain represents the complex relationships between intellectual property assets, creating a robust record of economic commitments. As the volume and velocity of intellectual property scales from the acceleration of artificial intelligence, Story's network will serve as the backbone of a new intelligence economy. Whereas Bitcoin operates as the store of value for all commodity assets in the form of digital gold, Story operates as a store of value for all intellectual assets in the form of programmable intellectual property.

References

[1] Satoshi Nakamoto. Bitcoin: A peer-to-peer electronic cash system. https://bitcoin.org/bitcoin.pdf, 2008.

[2] Gavin Wood. Ethereum: A secure decentralized generalized transaction ledger. https://api.semanticscholar.org/CorpusID:4836820, 2014.

[3] Anatoly Yakovenko. Solana: A new architecture for a high performance blockchain. https://solana.com/solana-whitepaper.pdf, 2018.

[4] Christopher Goes. The Interblockchain Communication Protocol: An overview. https://arxiv.org/abs/2006.15918, 2020.

[5] Zihan Zheng, Peichen Xie, Xian Zhang, Shuo Chen, Yang Chen, Xiaobing Guo, Guangzhong Sun, Guangyu Sun, and Lidong Zhou. Agatha: Smart contract for DNN computation. https://arxiv.org/abs/2105.04919, 2021.

[6] Jiwei Yang, Xu Shen, Jun Xing, Xinmei Tian, Houqiang Li, Bing Deng, Jianqiang Huang, and Xiansheng Hua. Quantization networks. https://arxiv.org/abs/1911.09464, 2019.

[7] Yiannis Psaras and David Dias. The InterPlanetary file system and the Filecoin network. In *2020 50th Annual IEEE-IFIP International Conference on Dependable Systems and Networks-Supplemental Volume (DSN-S)*, page 80. IEEE, 2020.

[8] Sam A. Williams, Viktor Diordiiev, and Lev Berman. Arweave: A protocol for economically sustainable information permanence. https://api.semanticscholar.org/CorpusID:234789646, 2019.

[9] Coalition for Content Provenance and Authenticity. C2PA Specifications. https://c2pa.org/specifications/specifications/2.1/index.html, accessed February 2025.

[10] CometBFT. https://cometbft.com/, accessed February 2025.

[11] Jae Kwon. Tendermint: Consensus without mining. https://tendermint.com/static/docs/tendermint.pdf, 2014.

[12] Zerui Cheng, Edoardo Contente, Ben Finch, Oleg Golev, Jonathan Hayase, Andrew Miller, Niusha Moshrefi, Anshul Nasery, Sandeep Nailwal, Sewoong Oh, Himanshu Tyagi, and Pramod Viswanath. OML: Open, monetizable, and loyal AI. Cryptology ePrint Archive, Paper 2024/1573, https://eprint.iacr.org/2024/1573, 2024.

[13] Andrea Muttoni and Jason Zhao. Agent TCP/IP: An agent-to-agent transaction system. https://arxiv.org/pdf/2501.06243, 2025.

[14] Story Protocol. Programmable IP License. https://github.com/storyprotocol/protocol-core-v1/blob/main/PIL_Testnet.pdf, 2024.

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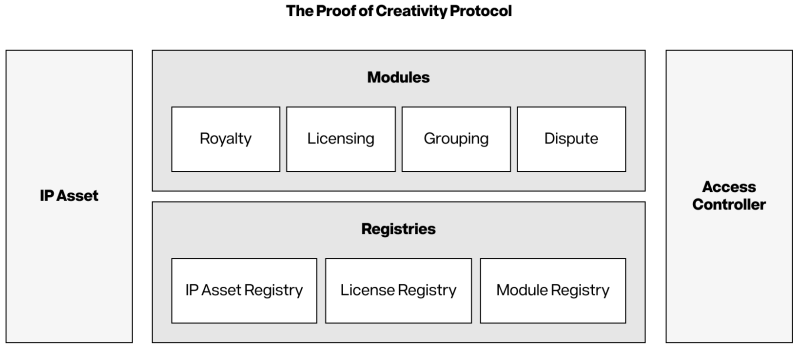
Appendix A - The Proof of Creativity Protocol

The Proof of Creativity (PoC) protocol introduces an open Programmable IP protocol, transforming intellectual property (IP) into a first-class entity within the blockchain ecosystem. Central to this system is the IP Asset and its associated IP Account, a smart contract account that acts as the core identity for each IP.

This account-centric approach facilitates the storage and management of IP-related data and enables the execution of diverse functions to interact with and manipulate that data through Modules. These modules extend the protocol's functionality, empowering creators and users to seamlessly manage and license their IP in a programmable and decentralized environment.



To realize this vision, the protocol consists of two elements: data structures and modules. Data structures are the "nouns" of the protocol, storing relevant IP metadata into "IP legos." The modules are the "verbs," enabling a diverse array of functionality for the IP assets registered on the protocol.

Data structures (Nouns)

IP Assets are the foundational programmable "IP legos" on the PoC protocol. Each IP Asset represents an onchain IP and its associated IP Account, which is a modified ERC-6551 (Token Bound Account) implementation. An IP Asset transforms a new or existing NFT that represents a tokenized IP into a versatile and interactive IP entity.

IP Accounts are programmable accounts mapped to the tokenized IP. It is implemented as a modification to ERC-6551. A key feature of the IP Account is the generic "*execute()*" function, which allows calling arbitrary modules within Protocol via encoded bytes data (thus extensible for future modules).

Modules (aka Verbs)

Modules (aka Verbs) are customizable smart contracts that define and extend the functionality of IP Assets in PoC Protocol.

Licensing Module

The Licensing Module serves as a cornerstone of the protocol, empowering IP holders, as licensors, to create and manage license agreements using License Tokens and their associated license terms. These terms are derived from a predefined License Template. For derivative works, the terms of parent IP agreements are also considered in the licensing process. The result of this process is the minting of a License Token.

The PoC Protocol introduces a Programmable IP License (PIL) as an out-of-the-box License Template. This template is designed to be universally applicable and easily adoptable by IP holders, streamlining licensing processes and establishing a standardized legal framework.

Programmable IP License (PIL)

A License Template is a legal framework encoded in smart contracts ("programmable") that specifies various licensing terms for an IP. These terms may include parameters such as, commercialization, transferable, or percentage of royalty.

The Programmable IP License (PIL), developed by the Story team ([14]), serves as the first example of such a License Template. While the terms of an IP Agreement (IPA) and the issuance of License Tokens occur onchain, these are legally enforced through an offchain legal framework defined by the PIL. This legal contract enables tokenized IP assets to be integrated into traditional legal systems and provides clear guidelines on how creators can remix, monetize, and create derivatives of their IP.

Royalty Module

The Royalty Module manages revenue distribution between child IP Assets and their ancestor IP Assets. This allows IP holders, as licensors, to define the percentage of revenue that a child IP must pay to its parent IP. Similarly, the holder of a child IP, acting as a licensor, can specify the percentage of revenue that its derivative IPs must contribute to the child IP.

When revenue is paid to an IP Asset, it is stored in the IP Royalty Vault. Each IP Asset has its own Royalty Vault. Holders of Royalty Tokens have the right to claim their proportional share of the funds stored in the Royalty Vault.

The Royalty Module supports customizable royalty policies to accommodate various royalty payment structures. By default, the module enables each parent IP Asset to establish a minimum royalty percentage. This percentage dictates the share of revenue that direct derivative IP Assets in a derivative chain must allocate to their parent IPs, as defined in the licensing agreement.

Dispute Module

The Dispute Module provides a framework for users to raise and resolve disputes through arbitration. The module's arbitration system is built around two primary components:

- **Arbitration Policies:** An arbitration policy defines the rules, processes, and entities responsible for resolving disputes.
- **Arbitration Penalty:** Arbitration penalties determine the consequences for an IP Asset that has been "tagged" as part of a dispute.