TsarChain

GRAFFITI Protocol - Draft v0.1

"No corps, No midlemen, No buzzers
share your art and let your voice be remembered"

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Manifesto

GRAFFITI is a protocol for loud art and louder truth. Not an **NFT**, not a stock, not a brand collab. Each work is a digital monument - permanently archived by TsarChain Storage Nodes and anchored to a block.

Public comments are permanent too: once broadcast, they cannot be edited or silently removed at the protocol level. Instead of chasing viral views, GRAVITY focuses on **"durability, traceability, and fair rewards for creators"**.

There is no central moderator with a "ban" button. If someone wants to speak here, they contribute to the cost of storage — and the artist earns a share.

GRAVITY is a **"pro digital sovereignty archival layer"** within the broader TsarChain ecosystem a way for communities to preserve culture and conversation over time, while each node operator and user remains responsible for complying with the laws in their own jurisdiction.

1. Core Ideas

- **Not an NFT:** No transferable ownership. GRAVITY is an archive of art & voice, not a speculation.
- **Block Anchor:** A work's identity binds its content hash with the block hash in which the upload TX is included.
- **Permanence:** Files are replicated by Storage Nodes; on-chain commitments reference what must exist off-chain.
- **Immutable Comments:** Each comment is a paid on-chain event; comment text is stored on-chain within safe byte limits.
- **Automatic Royalty:** 80% of every comment fee goes to the creator, 10% to the Storage Pool, ~10% to miners as fee.
- **Moderatorless:** The protocol is neutral. Local enforcement (if any) is a node operator choice.

2. Roles & Responsibilities

- **Creator (Artist):** Uploads art, pays an upload fee, receives 80% royalty from every paid comment.
- **Citizen (Commenter):** Pays to append a permanent comment to the work; can add an optional tip.
- **Miner:** Validates and mines blocks; collects ~10% of each comment as transaction fee (input-output delta).
- **Storage Node:** Permanently stores replicated copies (R). Earns 10% from comments plus a share of the upload endowment.
- **Indexer/Explorer:** Indexes GRAVITY events and renders works & comment threads.

3. Economic Flows

3.1 Upload Fee :

Creator pays based on file size: `UPLOAD_FEE` with `MIN_BILLABLE_SIZE` *(SIZE = 100KB).*
Default allocation: 100% to the work's Storage Pool endowment to fund long-term retention (tunable in config.py).

3.2 Comment Fee :

Each comment includes `comment_amount` (≥ `COMMENT_FEE_MIN`).
Automatic split:

- 80% -> creator address (royalty).
- 10% -> work's Storage Pool (micropayment for replicas).
- ~10% -> miners as fee (achieved by making total outputs = 90% of inputs).

3.3 Tips Optional `tip_amount` goes 100% to the creator

4. Data Model & Identifiers

4.1 Art Object

- **File hash:** *Hc = SHA256*(file_blob).
- **Anchor block:** *Hb* = block hash where the upload TX is confirmed.
- **Creator:** addr_c (P2WPKH/P2SH depending on TsarChain config).
- **art_id:** *SHA256("GRAVITY" || Hc || Hb || addr_c).*
- **Optional metadata:** mime_type, size_kb, title (≤ 64B), tags (≤ 128B).

4.2 Comment Object

- **Max length:** COMMENT_MAX_BYTES (e.g., 280B).
- **comment_id:** *SHA256(art_id || txid || vout_index).*
- **Comment text:** stored on-chain (UTF8 -> hex) via a compact data carrier field.
- **Anti spam lever:** COMMENT_FEE_MIN + optional wallet UI rate limiting.

5. Storage Layer (Permanent)

- **Replication factor R:** (default 5) using consistent hashing on a node ring keyed by art_id.
- **Storage Pool Address:** A deterministic address per art_id: *pool_addr = GRV_POOL(art_id).*
- **Proof of Retention:** every EPOCH_BLOCKS, each storing node proves possession via random byte range challenges; the current epoch's pool_addr balance is split among successful provers.
- **Endowment:** If no new comments arrive, the initial upload fee acts as a base endowment for periodic payouts.

6. Wire Format (On Chain Hints)

Use a compact data carrier tag (OP_RETURN style) for simple & deterministic indexing.
GRV_MAGIC = 0x47525631 ("GRV1") Events: POST, COMMENT

POST payload (pseudo): { magic: GRV_MAGIC, event: POST, Hc, size_kb, mime, addr_c, R_hint, meta_short }
Outputs: [pool_addr (upload endowment)]

COMMENT payload (pseudo): { magic: GRV_MAGIC, event: COMMENT, art_id, comment_utf8_hex }
Outputs: [80% -> addr_c, 10% -> pool_addr]; 10% miner fee via input-output delta.

7. Settlement & Payout

- **On POST:** the upload fee moves to the work's pool_addr. Funds unlock gradually per EPOCH_BLOCKS for nodes passing retention proofs.
- **On COMMENT:** the split in §3.2 is enforced on chain; no centralized distributor.
- **Penalty:** Nodes failing K consecutive epochs for a work receive no payout for those epochs (share redistributed to successful provers).

8. Limits, Abuse, and Privacy

- **Comment size:** constrained by COMMENT_MAX_BYTES; UTF8 counted by bytes (emojis included).
- **Wallet rate limit:** optional UI cooldown per address per art to reduce spam floods.
- **Pseudonymity:** comments originate from user addresses; allow new address per comment for better privacy.
- **Illegal content:** the protocol is neutral; storage is voluntary and non custodial. Node operators may set local policies.

9. Explorer & Indexer API (Sketch)

- GET_ART(art_id): { Hc, Hb, addrC, size_kb, mime, meta, replication, pool_addr }.
- GET_COMMENTS(art_id, paging): list { comment_id, txid, height, addr_from, text }.
- GET_STORAGE_STATUS(art_id): ring nodes, latest retention proofs, payout schedule.
- SEARCH(query): text/tags (optionally mirrors off chain index).

10. Worked Example

File: 720KB -> billable = 800KB. `UPLOAD_FEE` (0.8 TSAR) * 8 = 6.4 TSAR upload_fee -> `pool_addr`.

Comment A: 2 TSAR -> 1.6 to creator, 0.2 to `pool_addr`, 0.2 miner fee.

Comment B (with Tip): 5 TSAR tip -> 1.6 royalty (from 2 TSAR) + 5.0 tip to creator; 0.2 to `pool_addr`; 0.2 miner fee.

Payout: Per epoch, storage nodes passing proofs split the available pool for this work.

11. Parameters (config.py)

PARAM	Default (v0.1)	Notes
UPLOAD_FEE	0.8 TSAR	Upload fee per 100KB (rounded up)
MIN_BILLABLE_SIZE	100 KB	Minimum billable chunk
REPLICATION_R	5	Permanent replication factor
EPOCH_BLOCKS	720	Retention epoch (~1 day @2m/block)
COMMENT_MAX_BYTES	280	Max on chain comment bytes
COMMENT_FEE_MIN	1 TSAR	Minimum comment fee
ROYALTY_CREATOR	0.80	Creator share of comment fee
SHARE_STORAGE	0.10	Storage pool share of comment fee
SHARE_MINER_FEE	~0.10	Miner fee via I/O delta

12. Security Model (Short)

- TX signing follows TsarChain standards (P2WPKH/P2SH). GRAVITY adds new event types, not a new consensus.
- Clients validate file downloads via content hash *Hc* and block anchor *Hb*.
- Pool payouts are deterministic and auditable via `pool_addr` and retention logs.

13. Threat Notes & Anti Buzzer Posture

- **Sybil Storage:** mitigated by per epoch retention proofs & split among distinct node IDs.
- **Comment Flooding:** economic friction via `COMMENT_FEE_MIN` + wallet cooldown.
- **Content Takedown:** protocol has none. Storage is voluntary; diverse nodes = resilience. Buzzers must pay to speak - artists earn.

14. Notes

We honor difficult ideas and honest conversation, not harm. The aesthetic is underground by design: self-custody, no gatekeepers, receipts onnchain.

TsarChain and GRAFFITI sit inside a wider vision:

- a **"digital preservation system for cultural heritage and creativity"**.
- a **"pro digital sovereignty"** network where creators keep more control over how their work is stored and discovered.
- an ***experimental project, independent, and community-driven.***

This is an initial draft.
The Graffiti Protocol is still under development.
The draft may be amended over time, but the initial idea will remain consistent.