Giver: Toward an On-Chain Escrow Marketplace of Tangible and Intangible Assets Whitepaper v0.1

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Abstract

Giver is a minimalist escrow / marketplace framework built on Solana blockchain, combining SPL tokens and Token2022-NFTs to enable peer-to-peer exchange of goods, services, and other rights. Developed within final eight days of Cyberpunk Hackathon through a hybrid human–machine peer-learning process, it seeks to make cryptocurrency relevant for everyday value exchange rather than speculative capture.

1. Introduction

In the fifteen years since genesis of what is hereby been described as pECDLbp - i.e. the *planetary elliptic curve discrete logarithm bounty program* (Hensel, 1908; Silverman, 2009; Namztohoto, 2025) - the cryptocurrency ecosystem has largely failed to fulfill its emancipatory promise for more than few hundred thousands original gangsters (OG,Namztohoto (2013)). According to the mythical founder herself Nakamoto (2008), the original aim was to liberate individuals from the yoke of banks and financial conglomerates, enabling direct and trustless exchange of value.

Unfortunately, beyond ephemeral experiments such as the Silk Road and a handful of obscure darknet bazaars, humanity still lacks a functioning decentralized marketplace comparable in usability and impact to centralized giants such as eBay or Amazon. There has been no "Apple moment" in facilitating the exchange of goods, services, or tangible assets (TA) using crypto-native infrastructure.

The technology exists—but the social, infrastructural and partially also legal layer for everyday utility is missing. There is no crypto-powered marketplace easy enough for the elders, nor safe enough for children.

From Kyberia to Giver. *Giver* was initially conceived as a marketplace for the award-winning [1] and oldest Slovak digital community`kyberia.sk` self-govered by a unique political system known as "Parallel Democracy Model" (Hromada, 2013) whose internal content-economy system known as "Kyberia Open Ledger" Hromada (2022b) dates back to early years of third millenium.

[1] Prix Ars Eletronica 2013 Honorary Mention Ars Electronica (2014) category "digital communities".

Terminology. Within the *Giver* ecosystem three principal roles are defined:

- **Giver** — the entity presenting or offering an item, service, or right for redemption;
- **Redeemer** — the entity claiming or redeeming the offered item, service, or right, possibly in exchange for tokenized payment;
- **Vault** — the decentralized escrow mechanism ensuring that both parties' commitments are recorded, safeguarded and auditable.

The core circulating entity is an **NFT** (non-fungible token), which acts as a legal claim and may be transferred to third parties. Each NFT also serves as a *key* unlocking the corresponding off-chain contact or pickup information — this is the only information stored off-chain.

Each offered item or service moves through three canonical states:

1. **Presented (listed)** — the object or service is made visible for potential redeemers;
2. **Entrusted (deposited)** — the object or claim is placed under the vault's conditional custody;
3. **Attested** — both parties confirm fulfilment, triggering escrow settlement and possible redistribution of fees.

Technology. The infrastructure is built exclusively with vanilla JavaScript on the frontend, with no Node.js runtime. Web3 integration relies on `solana-web3.js` and `@solana/spl-token` libraries directly bundled. The backend offers REST routes mirroring on-chain smart contract routines. Listing creation is distinguished by a unique hierarchical attribute-tree schema and supports camera capture plus browser speech-to-text (STT) for metadata input.

Dual-token architecture. Giver harmonises classical SPL tokens (used as internal marketplace currency) with the Token2022 standard for NFTs. Transactions leverage memos and transfer-hooks so that the marketplace owner receives an automatic fee each time a presented object transitions into attested state. This architecture underscores transparency and decentralised fee logic.

Ethos and outlook. Our wish is simple: that Giver contributes to making crypto relevant again—to the people, to your mother, to anyone who ever exchanged something meaningful without intermediaries. We are aware of the potential for misuse: once assets are on-chain, they remain tradable even if the web frontend disappears.

Hence, until we establish a law-compliant curation and moderation mechanism, the source code is not public in order to avoid misuse by weapon and/or human trafickers and other malign actors.

Finally, it is notable that Giver was developed in eight days only, through a reciprocal human–machine peer-learning methodology (Hromada, 2022a). This process itself exemplifies the hybrid creative potential of the future the project attempts to prototype.

2. Smart Contract Backend Architecture

2.1 Conceptual Overview

The architecture of Giver is intentionally minimal. It presumes decentralisation does not require infrastructural excess but rather conceptual elegance. Each on-chain routine formalises a social contract between a GIVER, a REDEEMER and a vault. The vault acts as a distributed, cryptographically enforced witness.

2.2 Smart Contract Routines

Each transaction follows a small and deterministic set of routines, deployed as Solana on-chain programs written in Rust. These routines reflect human interactions in digital form:

1. **PRESENT:** the giver creates a listing, specifying parameters such as title, description, price, image, and attribute metadata. Fees are paid by the GIVER, memo eternalizes the moment of listing onchain.

2. **ENTRUST:** REDEEMER deposits the PRICE amount of SPL Tokens into the PDA vault. Tokens are locked in escrow, pending confirmation. NFT is transfered to REDEEMER, transfering her a legal ownership claim to the associated asset. Fees are paid by the REDEEMER.

3. **ATTEST:** both parties sign completion; the escrow is released to the GIVER, TransferHook sends 1 Token fee to the operator of the marketplace.

These routines correspond to REST endpoints in the backend (Section 2.3) and are compatible with Solana's Program Derived Addresses (PDAs) and transfer hooks.

Token Interaction. Transactions utilise both SPL tokens and Token2022 NFTs. SPL tokens function as the internal currency [2], while Token2022 NFTs encapsulate claims to tangibles/intangibles. Each NFT includes:

- **URI:** referencing JSON metadata (image, description, attribute tree);
- **Claim conditions:** defining who may redeem under what signature or fee constraint;
- **Vault reference:** linking off-chain physical custody with on-chain claim via a verifiable identifier.

Fee redistribution is embedded via transfer hooks inside the token account logic: whenever a listing transitions from entrusted to attested, the marketplace treasury receives a small percentage.

2.3 Backend: REST as Mirror of On-chain Logic

The backend (implemented in FastAPI + PostgreSQL) mirrors on-chain logic. Each REST route corresponds one-to-one with a smart contract action, maintaining semantic consistency.

[2] The fundamental "business" idea behind giver is that each individual marketplace runs has its own main currency of choice. The rest, market(s) decide.

Core routes.

- `/present` — registers a new listing and mints its NFT;
- `/entrust` — locks belongings under vault control;
- `/attest` — finalises the exchange, removes escrow, and records attestation.

Listings and attestations are stored in a schema like:

- `listings (listing_id, seller, state, price_amount, attributes, image_path, attestation_`
- `attestations (listing_id, redeemer, timestamp, signature);`

The *attribute tree* (JSONB) enables multi-category metadata—for example *book*, *art*, *software* within one unified listing structure.

Hybrid persistence. Only off-chain data stored is the contact/pickup information. In future iterations of the project, this may be encrypted and accessible to NFT holders only. The NFT's private key will serve as decryption key — marrying privacy, ownership and minimalism.

2.4 Frontend Integration

The frontend uses pure JavaScript and integrates:

- `solana-web3.js` for wallet connection, PDAs, signatures;
- `@solana/spl-token` for token operations;
- Token2022 extensions for NFTs, transfer hooks, memos.

Listing creation flow:

1. Capture image via camera API;
2. Use browser STT to dictate description;
3. Assign hierarchical attributes via attribute tree;
4. Post JSON to backend with metadata and mint NFT.

2.5 Security Autonomy

Once minted, NFTs and listings persist on-chain independently of any centralized frontend. Even if `giver.market` disappears, assets and claims remain tradable — the ledger endures.

In this sense, Giver is not a company but a protocol — a thin semantic layer reinterpreting how humans express generosity, reciprocity and trade in the post-corporate age.

3. Token Economics Governance Model

3.1 Design Philosophy

At the heart of Giver lies a conviction that tokens express participation rather than speculation. The marketplace token [3] functions as medium of exchange, incentive for fair behaviour, and value-redistribution mechanism.

3.2 Marketplace Token: TOKEN

TOKEN is implemented as a standard SPL token on the SOL chain. It serves as the unit of account for all marketplace interactions. Each listing's price, fee and attestation reward are denominated in TOKEN.

Utility. TOKEN flows through:

1. **Presentation Fee:** paid when presenting a listing, discouraging spam and funding curation;
2. **Escrow Redemption:** redeemers pay in TOKEN held in vault during entrusted state;
3. **Attestation Reward:** upon successful attestation giver receives redemption minus fee; redeemer receives nominal "trust reward";
4. **Marketplace Fee:** 1–3% redirected to treasury via transfer hooks.

Token Parameters. TOKEN has a fixed supply cap and deflationary mechanism via "attestation burns" (small fraction of each fee burned) encouraging long-term equilibrium between circulation and symbolic scarcity.

3.3 Dual Standard Economy: SPL + Token2022

Unlike conventional marketplaces, Giver adopts dual token standards:

- SPL token (TOKEN) – liquid currency;
- Token2022 NFT – unique claim asset.

These interact via memos and transfer hooks. Each transaction comprises:

1. Liquidity flow: transfer of TOKEN from redeemer to giver escrow and then release;
2. Claim life-cycle: PDA vault moves from "presented" → "entrusted" → "attested".

This dual architecture reflects the separation between economic value and claim validation.

[3] In the context of this paper we denote the marketplace token with label TOKEN. Note that the marketplace token of the 0th Giver instance is and will be the 3-decimal token Kybchain whose unit is GANESHA. More information about GANESHA, an SPL Token identified by UGYkQ1FjWDEZhL8Sgqh1KwgKFgnHkHJqWWWtewDk6t4 can be found in Guild of Exchange & Transport (2024).

3.4 Vault Treasury Redistribution

The vault functions as escrow and decentralized treasury. Marketplace fees accumulate under a multi-sig Solana address overseen by verified participants (givers, redeemers, maintainers). Treasury usage may include:

- Platform maintenance hosting;
- Development of curation/moderation mechanisms;
- Community grants within Giver ecosystem;
- Liquidity provision in decentralized exchanges to stabilise TOKEN value.

All treasury moves are on-chain, publicly auditable via Solana explorer.

3.5 Governance Model

Governance is attestation-weighted: each completed giver–redeemer interaction grants "credence points" convertible into voting power. Unlike token-only governance models, Giver ties influence to proven behaviour.

Proposal Flow.

1. A participant with N credence points may propose changes (fees, category inclusion, rules).
2. Voting occurs over fixed epoch (e.g., 7 days), weighted by credence.
3. Accepted proposals trigger on-chain parameter updates after safety delay.

Ethical Layer. A rotating cadre of volunteer curators ("guardians") monitors listing ethics and legal compliance. While they cannot reverse blockchain state, they can delist content in the web frontend until a formal moderation layer is deployed.

3.6 Socio-Economic Vision

Giver aims to restore reciprocity as a first-class economic principle. In a system dominated by speculation, TOKEN economy attempts to re-anchor value in verifiable acts of generosity, redemption and acknowledgement. Giver aspires to transform blockchain from casino to commons — an infrastructure of circulation, not extraction; of attested trust, not mere scarcity.

4. Implementation Development Process

This project was developed over eight days with the direct assistance of a large-language model aligned via reciprocal human–machine peer-learning. The process itself reflects the hybrid future the system attempts to prototype.

4.1 Timeline

- Day 1–2: conceptual framing, role/terminology definition, ecosystem mapping.
- Day 3–4: smart contract interface definition, attribute-tree schema design, backend routing definition.
- Day 5–6: frontend prototype (camera capture, STT integration), REST/chain integration via solana-web3.js spl-token.
- Day 7: token economics, treasury logic, governance flow.
- Day 8: testing, review, documentation and this whitepaper draft.

4.2 Technical Specification (placeholders)

Below are tables where you may paste exact contract/program identifiers, SQL table definitions, sizes etc.

Smart Contract Program Summary

Function name	Discriminator (hex)	On-chain program size (bytes)
PLACEHOLDER	0xXXXXXX	XXXXX
PLACEHOLDER	0xXXXXXX	XXXXX

Column	Type	Column	Type
listing_id	bigint	giver	text
price_mint	text	price_amount	numeric(20,9)
title	text	description	text
pickup_address	text	image_path	text
mint	text	listing_pda	text
listing_bump	smallint	vault_nft_ata	text
vault_payment_ata	text	giver_nft_ata	text
tx_signature	text	state	text
created_at	timestamp with time zone	updated_at	timestamp with time zone
attestation	text	redeemer	text
attestation_counter	smallint	attributes	hstore

Table 1: Schema of the `listings` table (column names and types).

To be continued...

5. Conclusion

Giver presents a novel protocol for decentralised exchange of goods, services and rights, grounded in a dual-token architecture, minimalist frontend/back-end integration, and a social framing that emphasises reciprocity over speculation. It is our hope that this system helps crypto become truly relevant again — and that a “mother”, a friend, a neighbour can use it without intermediaries. We invite early adopters, contributors and guardians to join the experiment and help build the infrastructure of a circulation-based commons in the digital age.

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