From Proof of Family

ROOTS

to Proof of Personhood

A Southern Italian village has verified human identity for four centuries — through oral tradition, family nicknames, and the memory of its elders. *We are putting it on-chain. And letting it grow.*

NETWORK	Kusama — Art & Social Experiments Bounty
TOKEN	ROOTS — non-transferable · no monetary value
DURATION	3 months · 5 phases
BUDGET	€ 74,627 gross · 62,189 DOT
NET	€ 50,000 operational · tax 33% included

ROOTS · KSM · 2025

01 / THE PROBLEM

The oldest anti-Sybil system in human history

As artificial intelligence erodes the boundary between human and machine, the question of who is a real person — and who belongs to a real place — becomes urgent. Current Proof of Personhood solutions are technically sophisticated but **culturally thin**: they verify existence without verifying belonging.

In small Southern Italian villages, every family carries a *'u nomme 'e casa* — a house name. Passed down orally for centuries. Invisible to official registries. Incomprehensible to outsiders. Impossible for any AI to fabricate.

> *"You cannot fake belonging to a place if you do not know who the people are and what they are called."*

These house names are hyper-local, semantically rich, socially validated, and — crucially — they **grow organically**. When a family branch forms, a new nickname is born. This makes them not just identity anchors, but a living, append-only social graph that predates the internet by four centuries.

02 / THE EXPERIMENT

From oral tradition to on-chain identity graph

The experiment takes place in **Caselle in Pittari**, a village of approximately 500 inhabitants in the Cilento region of Southern Italy. The village has a dense, living oral tradition of house names — *soprannomi* — that serve as the primary social identifier within the community.

Over three months, we document this tradition through ethnographic fieldwork, encode it on-chain using Kusama's Identity Pallet and native assets system, and run a gated OpenGov referendum accessible only to attested community members. The result is a living, on-chain proof-of-personhood system maintained by the community itself.

Core Innovation

House names are structured as a directed acyclic graph. Each ROOTS token stores a `roots_parent_token_id` — linking it to the ancestral family token. When a new branch forms and a new house name is born in the village, a new node is minted. The graph grows by itself, maintained by the community simply by living. No administrator. No central authority. No expiry date.

03 / TECHNICAL ARCHITECTURE

Two layers, one truth

Off-Chain Layer

Oral collection sessions take place in informal community settings — bars, homes, piazzas — to document 60 or more house names with etymology, family attribution, village quarter, and lineage context.

The Book of Names is a 100-copy printed archive deposited with the municipality and the local library. It is a standalone cultural artifact with value independent of the on-chain experiment.

The Lineage Graph is a visual and digital directed acyclic graph showing how house names branch over time. It is the conceptual model that maps directly onto the on-chain token structure.

On-Chain Layer — Kusama

Kusama Identity Pallet — Each attested participant registers with fields: `house_name` (dialect), `village_quarter`, `attestation_hash` (SHA-256 of physical certificate), `lineage_parent` (on-chain address of parent family). No custom smart contract is required.

ROOTS Token — Non-transferable identity token minted via Kusama native assets pallet with transfer permissions set to `None` at protocol level. Metadata stored on IPFS, hash anchored on-chain. The `roots_parent_token_id` field creates the on-chain DAG.

OpenGov Referendum — A real community decision, gated exclusively to attested identities. Vote weight is modulated by ROOTS Reputation score. Results are presented to the municipality as a legitimate expression of community will.

04 / ROOTS NFT

A living portrait of your place in the graph

Every attested family receives a **generative NFT** — a unique visual artwork procedurally rendered from the family's position in the lineage graph. The visual parameters are derived deterministically from on-chain metadata:

- › **Trunk width** — proportional to lineage depth; ancient families grow wider, more imposing.
- › **Branch count** — equals the number of living child tokens. When a new house name is born, the parent NFT grows a new branch automatically.
- › **Leaf density & color** — grows with Reputation score; shifts from terracotta (new family) to deep amber (ancient lineage).
- › **Animation speed** — slower and more majestic for high-reputation families.

The NFT is alive. When a child token is minted with this token as `roots_parent_token_id`, the artwork re-renders with a new branch. Family trees that grow in the physical world grow on-chain too.

Disclaimer: ROOTS NFTs have zero monetary value. They cannot be traded, sold, or exchanged on any market. They are identity attestation records — the visual representation of a family's place in the community graph.

05 / ROOTS REPUTATION

Trust that is earned, never bought

ROOTS Reputation is an on-chain score accumulated through verifiable community actions. It cannot be transferred, purchased, or delegated. It mirrors how trust actually works in the village: earned through presence, participation, and witnessed community contribution.

ACTION	POINTS
Attending the attestation ceremony	+50
Witnessing a new community member	+30
Participating in an OpenGov referendum	+20
Spawning a new family branch (new house name)	+40
Per year of continuous on-chain presence	+10
Receiving attestation from high-reputation family	+15

Vote Weighting — Logarithmic Fairness

In the OpenGov experiment, votes are weighted by a logarithmic function of reputation:

$$\text{weight = 1 + log}\blacksquare\text{(reputation / 50)}$$

This means elder families with deep roots carry more weight — mirroring the actual social dynamics of the village — without silencing newer voices entirely. A family with reputation 200 has a vote weight of roughly 2.0x, not 4x. The system codifies the existing hierarchy without amplifying it into oligarchy.

> *"We are not inventing this hierarchy — we are making it legible on-chain."*

06 / THE ATTESTATION CEREMONY

The bridge between oral tradition and on-chain identity

The ceremony is the cultural heart of the project. It is a public evening event in the village piazza — documented in its entirety on video — where families present themselves before a panel of three community elders.

The elders pose a challenge about the family's house name: its origin story, its etymology, the branch it belongs to. Only a genuine community member, embedded in oral tradition, can answer correctly. Those who pass receive a beautifully printed attestation certificate — the physical counterpart of their on-chain ROOTS token.

The ceremony is not just a verification mechanism. It is a cultural event that reactivates oral memory, creates intergenerational contact, and gives the village a reason to gather around its own identity.

07 / ROADMAP

5 phases · 3 months

Phase 1 — Oral Ethnography & Book of Names

4 WEEKS · OFF-CHAIN

The foundation of the project. A local coordinator leads informal collection sessions across the village, documenting house names with etymology, family attribution, and lineage context. The Book of Names is designed, printed in 100 archival-quality copies, and deposited with the municipality.

Local coordinator — 4 weeks full time	€ 4,000
Book of Names — design, layout, print (100 copies)	€ 2,000
Video documentation of all sessions	€ 2,500
Lineage graph — digital + large-format print	€ 1,500

Phase 2 — The Attestation Ceremony

2 WEEKS · OFF-CHAIN TO ON-CHAIN BRIDGE

The cultural centerpiece. A public event in the village piazza where families are attested by a panel of three elders through oral challenge. Full video documentary production. Archival-quality certificates printed for each attested family.

Event organization — venue, catering, setup	€ 3,000
Attestation certificates — premium archival print	€ 1,500
Professional video & documentary production (20 min)	€ 5,500
Elder witness honorarium (3 people + preparation)	€ 1,500
Community mobilization & press outreach	€ 1,000

Phase 3 — On-Chain Identity Registration

2 WEEKS · ON-CHAIN

Technical phase. ROOTS token minting tool developed, wallets created for participants, identity pallet fields populated. IPFS pipeline established for NFT metadata and attestation certificates. Onboarding sessions held over four evenings.

ROOTS token minting tool + IPFS pipeline + wallet UI	€ 4,000
On-chain fees — identity deposits + minting for 100+ participants	€ 1,200
IPFS pinning service (Pinata, 24 months)	€ 300
Onboarding sessions (4 evenings, guides, devices)	€ 2,000
Ethnographic documentation of onboarding	€ 1,500

Phase 4 — The Social Experiment

4 WEEKS · HYBRID

The governance experiment. An OpenGov referendum is designed around a real community question — road naming, urban project, resource allocation. Only attested identities participate, with votes weighted by Reputation score. Five facilitated deliberation sessions precede the vote.

Referendum design, OpenGov setup, public announcement	€ 1,500
Facilitated deliberation sessions (5 events)	€ 3,000
Data collection, analysis, academic-standard report	€ 2,500
Final documentary film (20 min, festival-quality)	€ 4,000

Phase 5 — Report & Replication Framework

2 WEEKS · OFF-CHAIN

The project's lasting contribution to the ecosystem. A 30-page research report in English and Italian, published on Mirror.xyz. A facilitator handbook that enables other villages across Southern Europe to replicate the experiment.

Research report — EN + IT, 30 pages, academic standard	€ 2,000
Mirror.xyz publication + media and ecosystem outreach	€ 1,000
Professional translation, layout, design	€ 800
Facilitator handbook for other villages	€ 1,200

Contingency Buffer

A contingency reserve of €2,500 covers unforeseen logistical expenses, exchange rate fluctuations at the time of conversion, and minor equipment needs that cannot be anticipated at proposal stage. Any unspent contingency will be allocated to Phase 6: replication in a second Southern Italian village.

08 / BUDGET SUMMARY

Total request: € 74,627 · 62,189 DOT

The operational budget of **€ 50,000** covers all five project phases over three months, including the full documentary production, on-chain infrastructure for 100+ participants, printed cultural artifacts in archival quality, and an academic research report.

#	PHASE	DURATION	EUR	DOT
Phase 1	Oral Ethnography & Book of Names	4 weeks	€ 10,000	8,333 DOT
Phase 2	The Attestation Ceremony	2 weeks	€ 12,500	10,417 DOT
Phase 3	On-Chain Identity Registration	2 weeks	€ 9,000	7,500 DOT
Phase 4	The Social Experiment	4 weeks	€ 11,000	9,167 DOT
Phase 5	Report & Replication Framework	2 weeks	€ 5,000	4,167 DOT
Buffer	Contingency	—	€ 2,500	2,083 DOT
Tax	Italian Income Tax (33% — IRPEF)	—	€ 24,627	20,522 DOT

Tax & Legal Transparency

The Italian income tax reserve of **€ 24,627** (IRPEF, 33% marginal rate) is included as an explicit line item. This applies at the moment of conversion from DOT to EUR for real-world operational expenses. The project operates through a registered Italian cultural association (APS — Associazione di Promozione Sociale), which enables proper invoicing, tax reporting, and legal accountability for all expenditures.

All receipts and invoices will be documented and included in the Phase 5 financial report delivered to the bounty curators. If operational costs come in below projection, the surplus from the contingency reserve will be allocated to Phase 6.

ROOTS tokens and NFTs have zero monetary value. They cannot be traded, sold, or exchanged. ROOTS Reputation points have zero monetary value. This project is a cultural experiment, not a financial product.

09 / WHY KUSAMA

The most unlikely Kusama users imaginable

This experiment belongs on Kusama for a precise reason: the required infrastructure already exists. The Identity Pallet, OpenGov, and native asset minting with configurable transfer restrictions are production-ready primitives. We are not building new tooling. We are proving that existing Kusama infrastructure works for a context its designers *never imagined.*

If Kusama's identity infrastructure works for elderly residents of a 500-person village in the Cilento hills — farmers, bar owners, retirees who have never held a crypto wallet — it works for anyone. This is the most meaningful stress test of "infrastructure for everyone" imaginable.

The replication framework produced in Phase 5 enables any village with a living oral identity tradition to run this experiment. Target regions: Southern Italy, Greece, Spain, Portugal, the Balkans, North Africa. Each replication generates a new subnet of the ROOTS graph, linked to the original via a `network_parent` field. Over time, ROOTS becomes a federated global graph of rural human identity.

> *"The oldest anti-Sybil mechanism in human history is a village that knows its own names. We are putting it on-chain — and letting it grow."*

You cannot transfer your roots.

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Budget: € 74,627 · 62,189 DOT · 3 months · 5 phases