

From Proof of Family

ROOTS

to Proof of Personhood

A village in Southern Italy has verified human identity for four centuries through the oral tradition of family nicknames. We are putting it on-chain. And letting it grow.

NETWORK	Kusama · Asset Hub
ASSETS	ROOTS NFT + ROOTS Token
BUDGET	62,239 DOT gross
TAX	Crypto Tax Italy 33% included
DURATION	14 weeks / 3.5 months
GATE	OpenSquare · Dual quorum

Submitted to the KSM Art & Social Experiments Initiative of the Kusama Vision Initiative via official governance channels.

The Oldest Anti-Sybil System in Human History

As artificial intelligence blurs the boundary between human and machine, current Proof of Personhood solutions are technically sophisticated but culturally hollow: they verify existence without verifying belonging.

In small villages of Southern Italy, every family carries a *'u nome 'e casa* — a house name passed down orally for centuries. Invisible to official registries. Incomprehensible to outsiders. Impossible to fake for any AI.

"You cannot pretend to belong to a place if you do not know who the people are and what they are called."

Every Attested Family Receives Two Distinct On-Chain Assets

The NFT is the identity instrument. The Token is the governance instrument. Neither can be transferred or sold. They must not be confused.

Asset 1 — The ROOTS NFT (Identity)

Every ROOTS NFT is a generative artwork computed from the family's position in the lineage graph. It evolves: each new sub-family adds a visual branch to the parent NFT. Rarity is structural — it emerges from the actual age and size of the family in the village, not from arbitrary assignment.

Field	Value	Notes
roots_parent_nft_id	nft_id null	null for founding families
lineage_depth	integer	generations from the graph root
branch_count	integer	direct sub-families
total_descendants	integer	all nodes in subtree
token_allocation	integer (computed)	recalculated on every graph change
succession_address	ss58 null	designated successor wallet

Field	Value	Notes
status	active dormant succeeded	updated by succession protocol

Asset 2 — The ROOTS Token (Governance)

Fungible token minted via Kusama Asset Hub with `transfer: None` at protocol level. Cannot be sold, sent or traded. **Zero monetary value.** The allocation changes as the family grows, using a formula with diminishing returns that ensures no single family can dominate governance.

Explainable in 30 Seconds to a 75-Year-Old Patriarch

The rule is simple: every registered relative gives you more voice. If you are alone, you have 1 vote. If you have 50 grandchildren in the graph, you have many more. The formula uses the square root internally to prevent a huge family from dominating alone — but this is a technical detail, not something to explain at the ceremony.

```
nodes = 1 + branch_count + total_descendants
# the capostipite himself + all nodes in his subtree

token_allocation = floor( sqrt(nodes) x 10 )

# Alone in the graph: sqrt(1) x 10 = 10 tokens
# 10 registered rel.: sqrt(11) x 10 = 33 tokens
# 54 registered rel.: sqrt(55) x 10 = 74 tokens
```

At the ceremony, one line is all that is said: "how many relatives you have registered, that is your voice." The square root ensures no family exceeds ~8% of total supply without any artificial cap.

Simulation — Village of 60 Families

Family	Nodes	Tokens	% of supply
Founders A (largest)	54	73	8.4%
Founders B	39	62	7.2%
Founders C	28	52	6.0%
Average family	10	31	3.6%
New family (alone)	1	10	1.2%
Top 3 combined	—	187	21.6% — not enough

Even the three largest families combined do not reach 22%. Winning a referendum requires broad consensus — a true village council.

Winning Requires Both the Votes and the Village's Presence

The square root formula solves weight concentration. The dual quorum solves the second problem: a large family cannot win with low turnout. It separates *how much you weigh* from *whether the vote is legitimate*.

Platform: OpenSquare (opensquare.network)

Gate: ROOTS Token balance ≥ 1

Quorum A: >50% of expressed tokens in favour

Quorum B: >33% of registered families have voted

Snapshot: block at referendum launch (end of Phase 3)

Quorum B is the popular legitimacy threshold. Token weight is the how of voting. Participation is the whether the vote counts. Even with 73 tokens (8.4%), a founding patriarch cannot do anything without bringing at least 20 of 60 families to the polls.

Why OpenSquare and not native OpenGov?

OpenGov uses KSM: whoever buys KSM commands. A gate is needed that is limited to attested members only, weighted by genealogical standing — not economic power. OpenSquare reads arbitrary on-chain balances with configurable rules.

When the Patriarch Dies, the NFT Remains. The Tokens Do Not.

Every patriarch will die. The wallet is inaccessible. The tokens vanish — they are not inherited. What remains is the family's NFT: the memory of the lineage, the root from which the children continue to branch. The new capostipite designated by the community receives tokens computed from the graph that already exists. The larger the family, the more voice it will naturally have.

Succession Address ♦ Recommended

Designate an heir while alive

At the ceremony, 2 minutes to sign the successor's name on-chain. At death, transfer is immediate — no limbo, no waiting.

- + Explicit, reversible, immediate. The ideal case.
- Requires proactive action at the ceremony.

What happens without designation

Tokens burned — NFT remains

The deceased's tokens are burned. The NFT stays at the top of the graph as historical memory. Each directly registered child receives +1 symbolic token.

- + Power is not inherited — it resets and starts over.
- The new capostipite starts from the existing graph.

Community attestation — 30 days

Three witnesses from different quarters

Within 30 days: 3 token-holders from different village quarters co-sign the successor. Family members cannot attest themselves — conflict of interest eliminated.

- + The village already knows the successions. Formalises the obvious.
- Requires off-chain coordination across quarters.

Proof of Life — Annual

On-chain heartbeat

Every 12 months every capostipite signs a remark on-chain. If not: status "silent", cannot vote. After 6 months of silence the succession protocol activates.

- + Distinguishes abandonment from death. Negligible cost.
- Requires digital literacy from the oldest patriarchs.

At the ceremony every capostipite hears three things:

- 1. Your tokens vanish with you — they are not inherited.*
- 2. Your NFT remains: it is the memory of your family.*
- 3. Every directly registered child receives 1 token in your memory.*

3.5 Months to Deliver

Phase	Description	Weeks	Type
1	Oral Ethnography & Book of Names	1–4	Off-chain
2	The Attestation Ceremony	5–6	Bridge
3	On-Chain Registration	7–8	On-chain
4	The Social Experiment (OpenGov)	9–12	Hybrid
5	Report & Replication Framework	13–14	Documentation

Phase 1 — Oral Ethnography & Book of Names (Weeks 1–4)

60+ house nicknames collected. Lineage graph mapped. 100 copies of the Book of Names printed and deposited with the Municipal office. Video documentation of every session.

Phase 2 — The Attestation Ceremony (Weeks 5–6)

Public event with a panel of elders. The succession protocol explained to every capostipite: "designating an heir is part of the responsibility of holding the token." 20-minute documentary filmed.

Phase 3 — On-Chain Registration (Weeks 7–8)

Wallet onboarding. ROOTS NFT and token minting. Redistribution indexer live and operational. IPFS pipeline active. 100+ participants registered.

Phase 4 — The Social Experiment (Weeks 9–12)

OpenSquare referendum open with dual quorum. Facilitated deliberation sessions. Data collected on participation, vote distribution, and succession designations.

Phase 5 — Report & Replication Framework (Weeks 13–14)

Referendum result delivered to the Municipal office. 30-page report on Mirror.xyz. Succession protocol documented. Facilitator handbook for other villages.

62,239 DOT Gross — Crypto Tax Italy 33% Included

Payment Milestones

Milestone	Deliverable	Phases	Net DOT	Tax	Gross DOT	Release
M1 Start	Agreement signed. On-chain identity verified. Local coordinator engaged. Phase 1 underway.	Phase 1	7,500	3,694	11,194	Wk 1
M2 100+ Tokens	100+ NFTs + tokens on-chain. Indexer live. Book of Names deposited. Referendum launched.	Ph 2–3	17,500	8,619	26,119	End wk 8
M3 Final	Referendum closed. Result to Municipal office. Documentary. Mirror.xyz report. Handbook.	Ph 4–5 + Cont.	16,700	8,226	24,926	End wk 14
TOTAL			41,700	20,539	62,239	

Budget by Phase

Phase	Activity	Net DOT	Crypto Tax Italy	Gross DOT
1	Oral Ethnography & Book of Names	7,500	3,694	11,194
2	The Attestation Ceremony	10,000	4,925	14,925
3	On-Chain Registration	7,500	3,694	11,194
4	The Social Experiment	9,200	4,531	13,731
5	Report & Framework	4,200	2,069	6,269
—	Contingency buffer	3,300	1,626	4,926
TOTAL	14 weeks / 3.5 months	41,700	20,539	62,239

Two Layers, One Truth

Off-Chain Layer

- Oral collection sessions (bars, homes, village squares)
- Book of Names: physical archive, 100 copies, deposited with the Municipal office
- Lineage graph indexer: reads NFT metadata from IPFS, computes token_allocation, calls Asset Hub
- Succession event log: off-chain record of all claims and their outcomes
- Video documentation of all project phases

On-Chain Layer — Kusama Asset Hub

Component	Description
Kusama Identity Pallet	house_name, village_quarter, attestation_hash, lineage_parent
ROOTS NFT	Non-fungible, generative, lineage on IPFS, evolves with the graph
ROOTS Token	Fungible, transfer: None, dynamically allocated with sqrt formula
OpenSquare Space	Referendum with dual quorum: tokens + participating families

ROOTS NFT Metadata Schema (IPFS)

```
{
  "name": "ROOTS [House Name] / [Village]",
  "attributes": [
    { "roots_parent_nft_id": "nft_id | null" },
    { "branch_count": integer },
    { "total_descendants": integer },
    { "token_allocation": integer (computed) },
    { "succession_address": "ss58 | null" },
    { "status": "active|dormant|succeeded" }
  ],
  "properties": { "transferable": false, "monetary_value": false }
}
```

Known Unknowns for Future Investigation

Quorum B on OpenSquare

Does the platform natively support a quorum by number of participants in addition to token weight? To be verified. Alternative: off-chain check with the indexer validating the result before it is officially declared.

Indexer trust model

In the MVP, allocation computation and token redistribution are trusted operations. A production version would use an on-chain oracle or a Substrate pallet with direct IPFS reading — removing the centralised trust assumption.

Quarter identification for succession attestation

The succession protocol requires the 3 witnesses to be from different village quarters. The `village_quarter` field must be encoded in NFT metadata at registration and be verifiable on-chain by the indexer.

Proof of life for elderly patriarchs

The annual remark is technically trivial but requires continuous wallet access. A local assistance protocol is needed — likely through the quarter representative already planned in Phase 2.

DISCLAIMER

ROOTS tokens and NFTs have zero monetary value. They cannot be traded, sold or transferred. The redistribution mechanism creates governance weight, not financial value. The project operates under Italian law. All crypto proceeds are subject to Crypto Tax Italy (33%) at EUR conversion.

ROOTS · Kusama Network · KSM Art & Social Experiments Initiative · 2026 · Built in Southern Italy. Rooted in four centuries of oral tradition.