

WORKSHOP PRESENTATION

NFT + DAO Architecture for Real-World Information Systems

A decentralized architecture integrating NFT-based digital assets and DAO governance into usable information systems.

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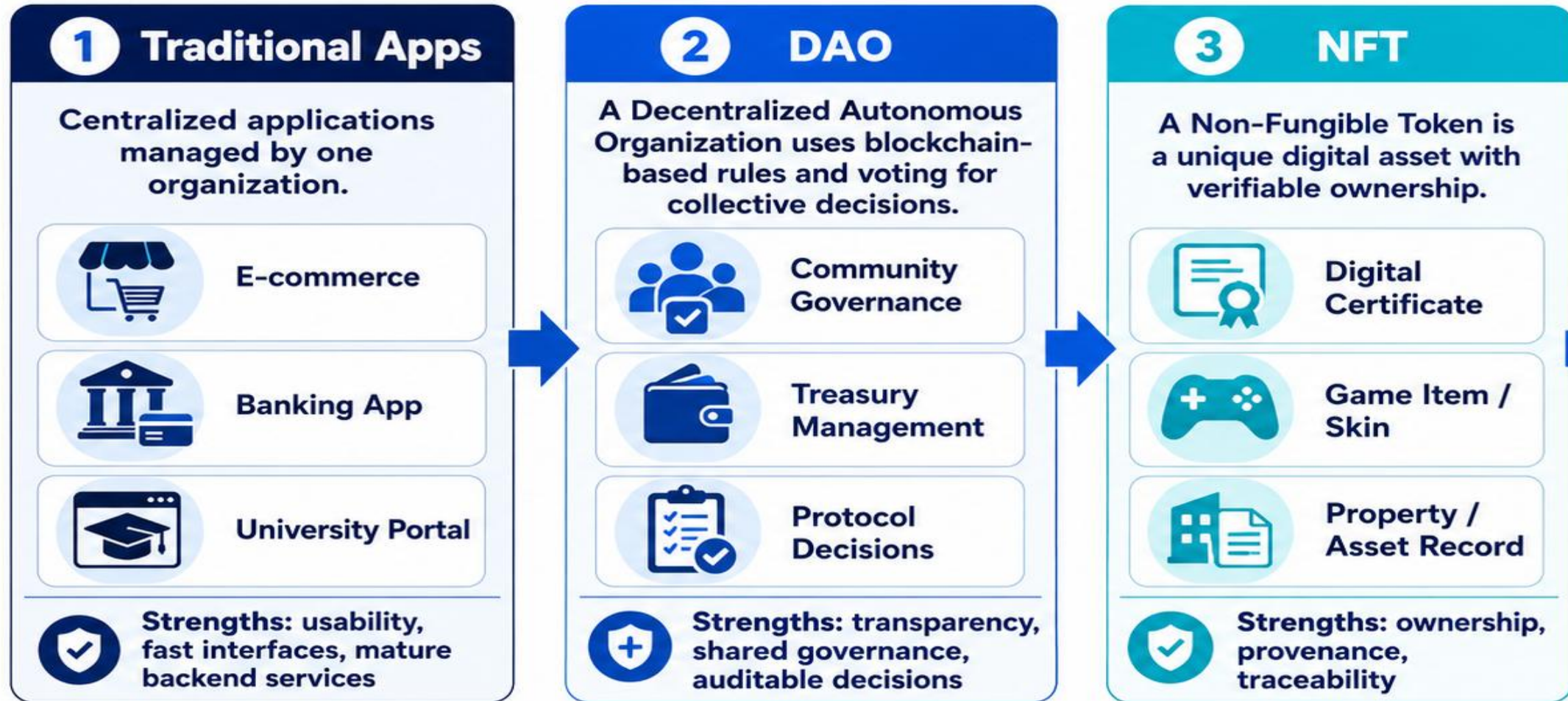
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Web3 tools are powerful — but real products need more than smart contracts.

Digital ownership

Assets must be unique, verifiable, and portable.

Examples: certificates, game items, records.

Transparent governance

Organizations need rules for approval, update, and revocation.

Decisions must be auditable, not hidden.

Usable deployment

Real systems still need apps, APIs, storage, and identity.

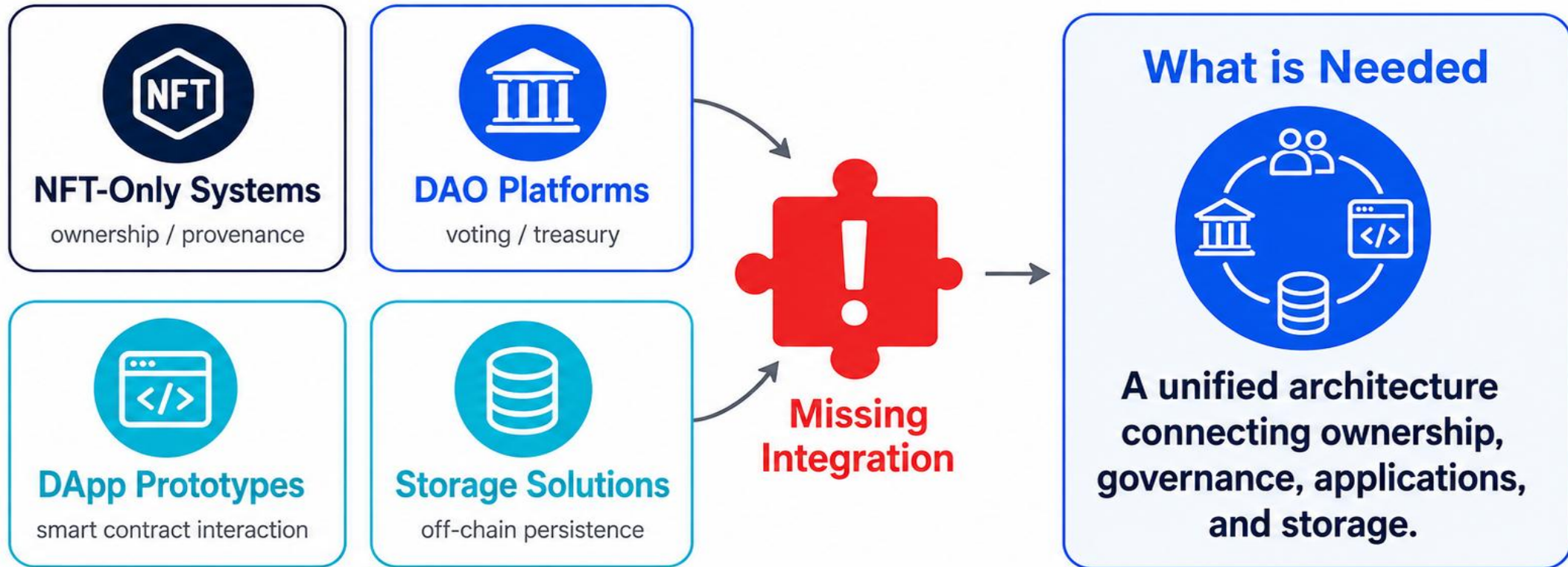
Otherwise blockchain stays a prototype.

Core issue

Most existing solutions focus on one piece of the puzzle — NFTs, DAO voting, or smart contracts — but not the full information system needed for real deployment.



Current approaches solve pieces of the puzzle, not the whole system.

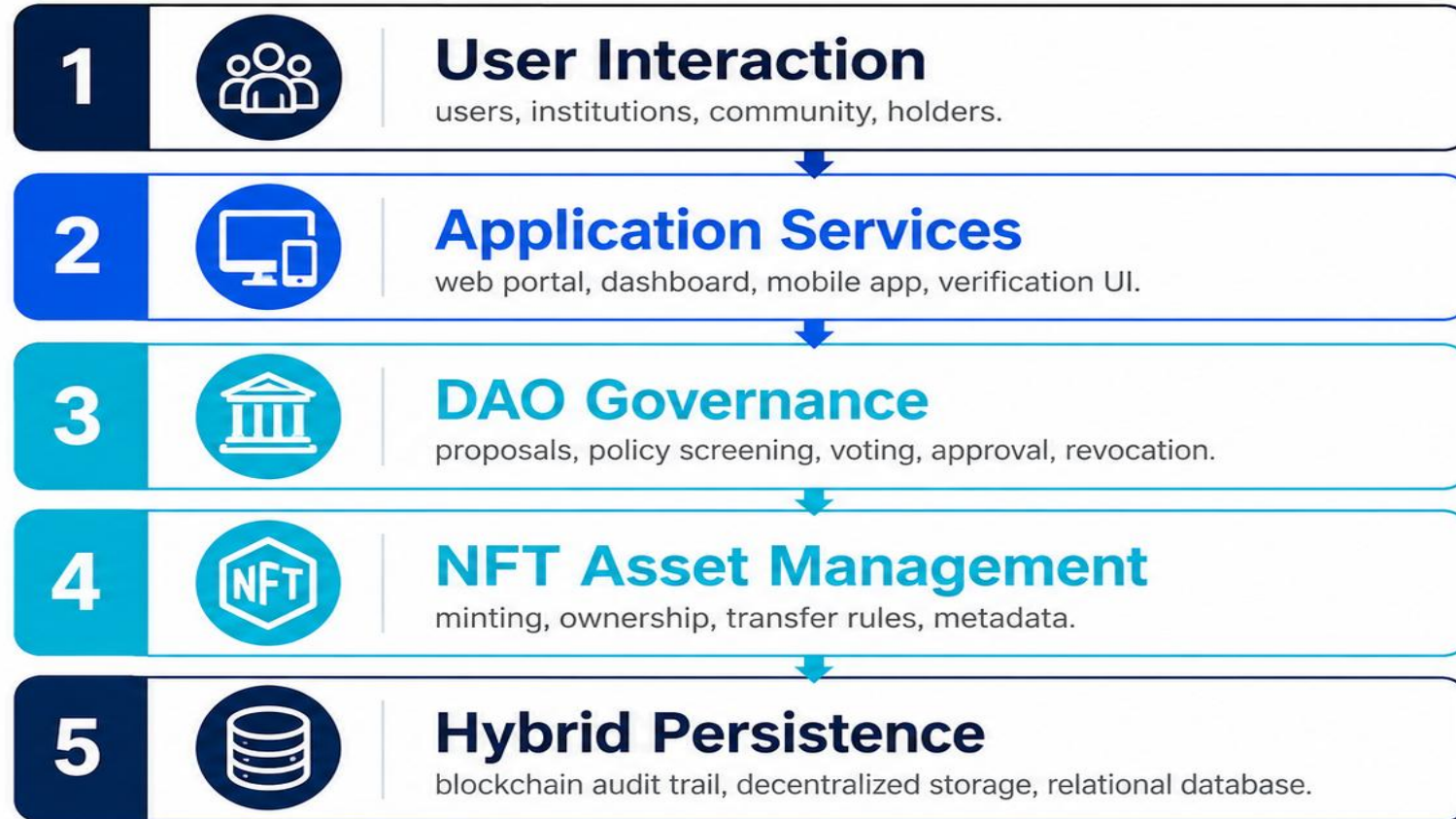


Takeaway: The contribution is not a new token or DAO protocol; it is a system architecture that makes these technologies deployable in practice.



One architecture connects Web2 usability with Web3 trust.

A unified 5-layer framework for real-world NFT + DAO systems





Core Novelty

The work does not propose another token or DAO platform.

It proposes a deployable architecture that connects digital assets, governance, backend workflows, and hybrid storage.

1

NFT Ownership

digital asset proof

2

DAO Governance

policy and approval

3

Backend Bridge

apps, APIs, storage

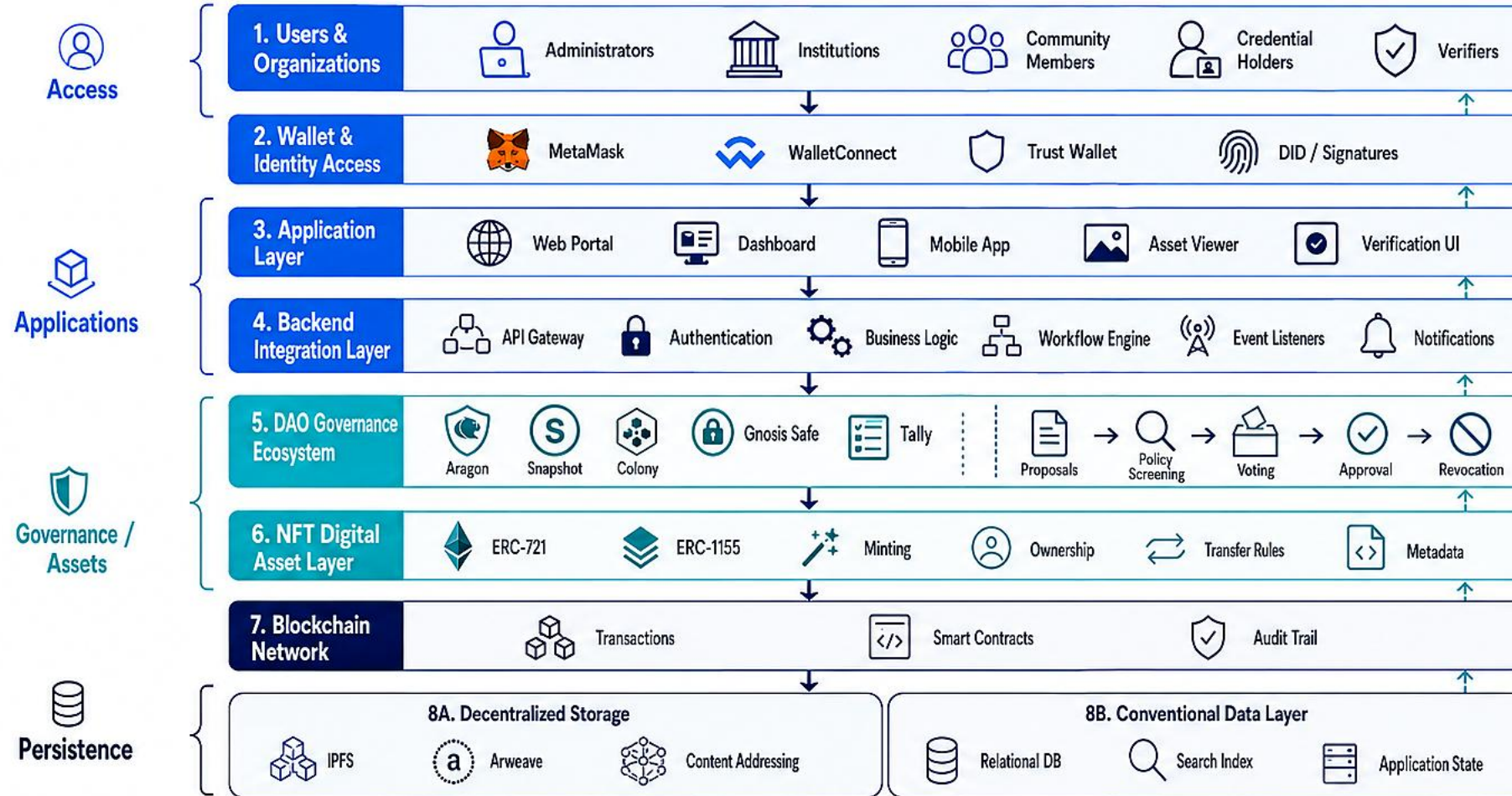
Main message: isolated Web3 tools become practical only when designed as a complete information system.

System Architecture

Detailed view



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Example Use Cases

Certification Apps

- Asset: NFT certificates
- Benefit: DAO issuance/revocation, instant verification

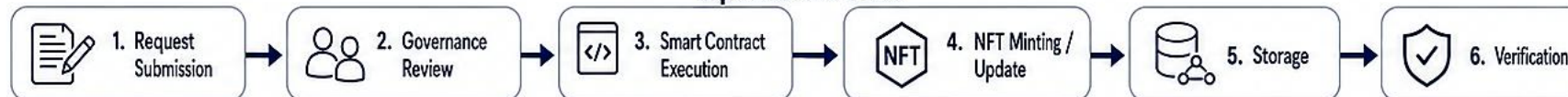
Gaming Apps

- Asset: NFT items/skins
- Benefit: DAO economy rules, player ownership

Construction Apps

- Asset: NFT building dossier
- Benefit: DAO approval of updates, traceable lifecycle

Operational Flow

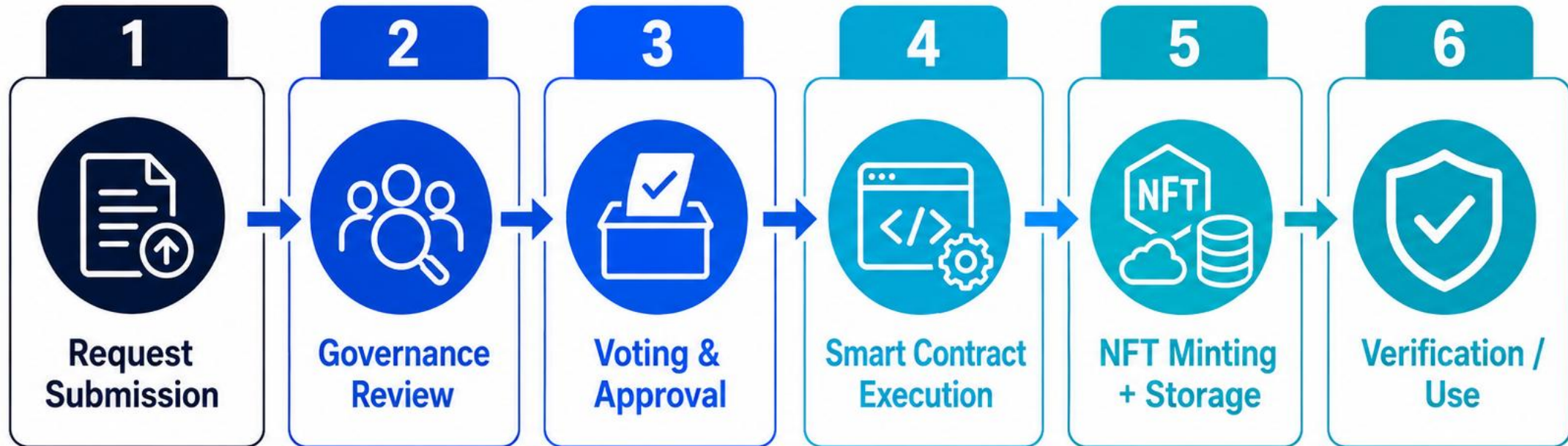


How the System Works

End-to-end workflow



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Applies to



Certification Apps
issue / verify



Gaming Apps
mint / trade



Construction Apps
record / approve



One architecture can support many application domains by changing the asset type and governance rules.

Certification apps

NFT = diploma or certificate

DAO = issuer approval and revocation

Benefit = instant, tamper-evident verification

Gaming apps

NFT = rare item, skin, character, ticket

DAO = economy rules and community decisions

Benefit = player ownership and tradable assets

Construction apps

NFT = building dossier or record

DAO = consortium approval of updates

Benefit = traceable lifecycle and shared accountability

Ticketing

Property records

Supply chain

Membership

Digital identity



Validation setup

Workshop paper: conceptual architecture, not a full production prototype

Main scenario: digital credential issuance, verification, update, and revocation

Blockchain layer: smart contracts and ERC-721 / ERC-1155

Governance examples: Aragon, Snapshot, Colony, Gnosis Safe, Tally

Storage model: blockchain proof + IPFS/Arweave + application database

Key findings

Transparency

DAO decisions are auditable.

Interoperability

APIs bridge Web2 and Web3 components.

Deployability

Hybrid storage supports practical deployment.

Usability

Apps and wallets make the system accessible.

Scalability

Not all data has to live on-chain.



1

Unified framework

Brings NFT assets and DAO governance into one deployable system architecture.

2

Five-layer model

Separates users, apps, orchestration, governance/assets, and persistence.

3

Workflow clarity

Shows how requests become governed digital assets with verifiable history.

4

Real-world relevance

Demonstrates applicability to certificates, gaming, construction, and more.



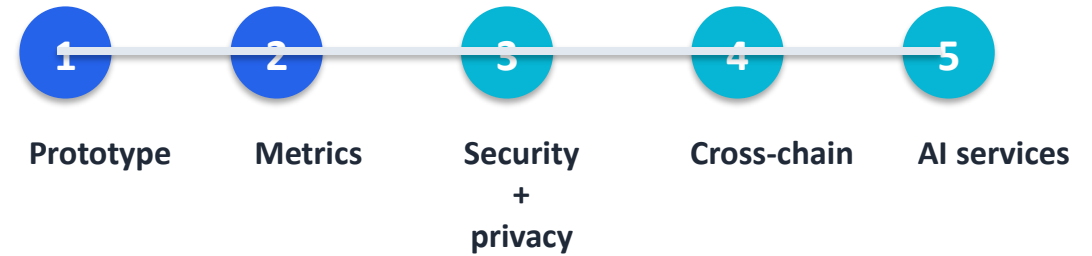
Current limitations

Conceptual architecture; no full production prototype yet

No quantitative measurements for latency, gas cost, throughput, or usability

Security, privacy, and governance risks still need formal evaluation

Roadmap



Next research goal

Build and test a prototype that measures performance, user experience, and policy/security behavior in real deployments.

KEY TAKEAWAYS

One architecture makes Web3 usable in practice.

- NFTs represent the digital asset.
- DAOs govern approval, update, and revocation.
- Apps and APIs make the system usable.
- Hybrid storage keeps it scalable and practical.
- The same pattern can support certificates, gaming, and construction apps.



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