

Carnegie Mellon University in Qatar
67-404 Blockchain Applications – Fall 2025

Project Proposal

Athar (آثار): Blockchain for Cultural Heritage Preservation

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Problem

Across the Arabian Gulf, cultural heritage practices (from Sadu weaving to pottery, embroidery, calligraphy, poetry, and even storytelling) face risks of decline. Traditional artifacts degrade physically over time (Heide Museum of Modern Art, 2024), while machine-made reproductions and a lack of provenance records undermine authenticity (Stublić et al., 2023). Oral traditions risk being lost entirely, as they are often transmitted through lived practice rather than formal archives (UNESCO, n.d.). Qatar, while rich in intangible heritage, has limited digital infrastructure for safeguarding these traditions (Ministry of Culture, State of Qatar, 2025). Without trustworthy preservation methods, both material and oral heritage could disappear from collective memory.

Users and Stakeholders

- **Primary users:** Artisans, storytellers, and cultural custodians seeking recognition and cultural preservation of their works.
- **Secondary Users:** Certification Authorities (e.g., Qatar Museums, cultural NGOs) validating authenticity..
- **Others:** Researchers, educators, and the public who benefit from transparent, verifiable access to heritage knowledge (National Museum of Qatar, n.d.).

Target Outcomes

- **A temper-proof registry** for diverse heritage artifacts, including woven textiles, pottery, manuscripts, calligraphy, or oral recordings.
- **Empowerment of creators** through attribution and potential royalties when their heritage is used in exhibitions, curricula, or media (Abou Naja Intellectual Property, 2024).
- **Decentralized archives** (image, videos, audio, transcripts) stored via IPFS to ensure long-term accessibility (The Filebase Team, 2025).
- A framework adaptable to any form of **intangible heritage**, starting with Sadu weaving as a pilot project.

Why Blockchain?

Blockchain is central to Athar (آثار) because it provides the authenticity, permanence, and transparency needed to preserve Sadu weaving in a trustworthy digital form. Unlike traditional databases, blockchain offers an immutable and tamper-proof record, ensuring that once a textile is verified and registered, its provenance and cultural details cannot be altered or lost. Each piece is minted as a Non-Fungible Token (NFT), embedding metadata such as the artisan's identity, region of origin, and symbolic patterns. This guarantees that the heritage and story behind every artifact are permanently traceable.

By combining blockchain with decentralized storage systems like IPFS, Athar creates a sustainable and resilient digital archive. This prevents both the physical degradation of textiles and the risks of centralized data loss, ensuring long-term accessibility for museums, researchers, and future generations. Furthermore, blockchain's smart contracts allow transparent governance, such as licensing rules or royalty mechanisms that can empower artisans and communities when their cultural heritage is showcased. Choosing Tezos as the underlying blockchain supports these goals with a sustainable, low-energy platform. In this way, blockchain is not merely a technical tool but a cultural safeguard, bridging traditional craftsmanship with modern technology to protect, validate, and celebrate Sadu weaving.

Differentiator

Athar differentiates itself from existing heritage digitization projects by going beyond simple archiving or museum-based preservation to create a trustworthy, community-centered system. While many initiatives focus on storing images or physical conservation, Athar anchors each artifact on the blockchain, ensuring authenticity, immutability, and provenance in a way traditional databases cannot. Unlike projects limited to material artifacts, Athar integrates intangible heritage such as oral storytelling, poetry, and songs by storing transcripts, audio, and video files on decentralized storage systems like IPFS, making it adaptable across cultural domains. Most importantly, Athar empowers artisans and storytellers by embedding smart-contract royalty and licensing mechanisms that provide recognition and potential compensation whenever their cultural works are exhibited, taught, or shared. This combination of authenticity, inclusivity, and community empowerment positions Athar as a sustainable and innovative model for safeguarding heritage in Qatar and beyond.

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