



Design Document

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Overview

What is StellarGame?

StellarGame is a Stellar NFT ecosystem built with gaming and 3D art in mind; it's a framework and API for developers, artists, and traders to interact with 2D and 3D artwork. The framework will provide user interfaces and programmatic APIs, both critical for building games and other services.

Built on the Stellar decentralized network, *StellarGame* integrates NFTs and other tokens allowing developers to create novel multi-user gaming experiences. A user's Stellar account can serve as login credentials through any supported decentralized wallet.

StellarGame is designed, developed, and maintained by LuxSkill, LLC.

Interface Services

Interface services are user interfaces (UIs) that allow anyone to interact with the *StellarGame* ecosystem and other community members. The list of supported UIs may grow as new use cases are discovered.

Decentralized Wallet Manager

The decentralized Stellar wallet manager abstracts away the complexities of handling many supported Stellar wallets, including browser extensions and hardware or cold storage options. At the time of writing, the following Stellar wallets are supported:

- Web browser
 - Albedo, xBull, Rabet, Freighter
- Hardware
 - Ledger S/X

Once a user chooses a wallet to sign in to their Stellar account, the manager will display the following:

- The public key currently logged in with and a copy button
- If testing, a button to receive testnet XLM from the faucet
- An option to disconnect the user's wallet from the interface

Once a wallet is chosen, the interface may save the wallet selection to allow users to choose the same option the next time they visit.

(See: "Wallet Manager" at the end of the document for a screenshot of the proof-of-concept)

Decentralized NFT Market

The decentralized NFT market UI allows users to search, buy, and sell NFT assets on the Stellar network. The interface will give the option to transact in USDC or XLM and switch between multiple markets if available. (e.g., USDC - NFT or XLM - NFT)

Because *StellarGame* is designed to provide a service to multiple projects, each asset in the ecosystem may have a description for which project it is associated with, stored on ledger or in a separate database such as the website that hosts the assets or IPFS. (More details in the next section on viewing and sharing NFT asset information.)

The search feature may attempt to look up NFTs based on different categories that the creator defined.

Buying and selling will be conducted on the Stellar decentralized exchange, using the market interface to set respective orders on the ledger. Each ledger operation can take up to five seconds or more to complete.

The market interface will have two main tabs and an item inspection window where users can interact with the NFT market.

- “Browse” Tab: This is where all NFT browsing, viewing, filtering, and sorting happens.
- “My Sales” Tab: This is where users can list or delist items for sale from their Stellar account/wallet on the market by placing or revoking a sell order on the DEX.
- “Item Inspection” Window: When a user chooses to view an item from the search results, preview, or inventory, a window that fully describes the item will be displayed, and the user can choose to purchase the NFT if it is available.

(See section “Market Interface” for a screenshot of the proof-of-concept)

View & Share NFTs

Viewing NFTs users own and sharing them with others is critical infrastructure for digital art, especially 3D objects. Not only should users be able to easily view and share the item on demand, community statistics and any form of social engagement should also be available in one place. To view all of a user’s available NFTs, Stellargame.io shall have a quick link page from where users can see all the *StellarGame* NFTs in their accounts.

To view and share a particular NFT, there will be a quick link page on stellargame.io that specifies the address of the NFT in the URL. That web page will automatically pull the graphic art information with any associated metadata from the blockchain and display it for the user. Optional community statistics may be displayed, such as trade history, whether or not the item is for sale on the DEX, etc.

Viewing will only be possible using supported formats such as well-known 2D and 3D media formats to be determined. 3D items will be displayed as one would expect, but 2D art may be displayed in traditional fashion or mapped onto a thick plane (frame) in 3D space.

Interoperability

An important note on interoperability is warranted in light of the already-existing NFT space on the Stellar network. *StellarGame* NFTs are a bit different from a picture of a wizard on IPFS with a CID stored as metadata associated with the Stellar asset representing it - but not different enough to deviate entirely from how the community has already decided to represent NFTs.

SEP-0039 is referenced here as the only existing reputable attempt at Stellar NFT interoperability. (See: [Stellar-protocol/sep-0039.md at master · Stellar/Stellar-protocol \(github.com\)](https://github.com/Stellar/stellar-protocol/blob/master/protocol/sep-0039.md))

SEP-0039 identifies the use of static and unchangeable served content such as classic Stellar TOML files on centralized domains or subdomains as interoperable; *StellarGame* NFTs, however, store critical metadata on the ledger itself. Therefore, we will choose a middle-ground approach: All non-critical data that can be entrusted by a domain owner is still stored in TOML or similar formats for descriptions. Critical data is stored as managed data on the ledger for a true decentralized and transparent experience.

The *StellarGame* market interface may support NFTs minted and displayed on other platforms; it is important to realize that this interface is truly decentralized and has the potential to access anything from the Stellar network and interpret it accordingly.

Framework Services

Framework services provide programmatic access to *StellarGame* assets so that developers do not need to worry about dealing with on-ledger complexities. This list of services may grow if new use cases are discovered.

Mint NFT Asset

The first and most crucial service is an API function to mint a new NFT on the Stellar network. What makes our system unique is the way we define attributes about each asset and store them on the blockchain, making it ideal for game development where one NFT might have different aesthetics or abilities than another.

Because of how NFTs might be used for gaming, we want to add the ability to collect payment to purchase an NFT before users receive it. (e.g., if there is some randomness to what users are receiving, they cannot brute force to get what they want.)

To achieve this, we introduce delayed reception or use a claimable balance where an NFT becomes available to the user at the appropriate time. The user will not own it until they claim it and will not see it until it is paid for (see section "Claim NFT"). As soon as an NFT is created, the issuing account is locked and the keys are discarded once the NFT is sent to the recipient.

Verify NFT Ownership

Another important way the Stellar network can be used is through verifying the authenticity of an asset (i.e., making sure no one can cheat in any game, including real life.) A *StellarGame* NFT is validated by checking any NFT a user is attempting to use against the up-to-date ledger state. This API function verifies the account in question is in possession of the NFT at the current ledger.

Get NFT Information

The "Get NFT Info" API function retrieves the associated metadata stored as managed data for a specific asset. At this point the information is READ-ONLY.

Example: A character in a video game has red hair, but in order for the game to render the correct hair color, it retrieves NFT information on the character from the ledger.

Get Claimable NFTs

An API function for getting a READ-ONLY list of claimable NFTs for a Stellar account. This allows the developer to display claimable assets how they wish.

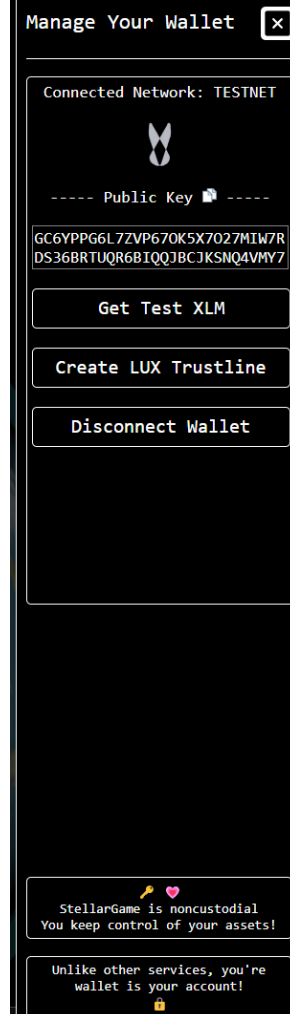
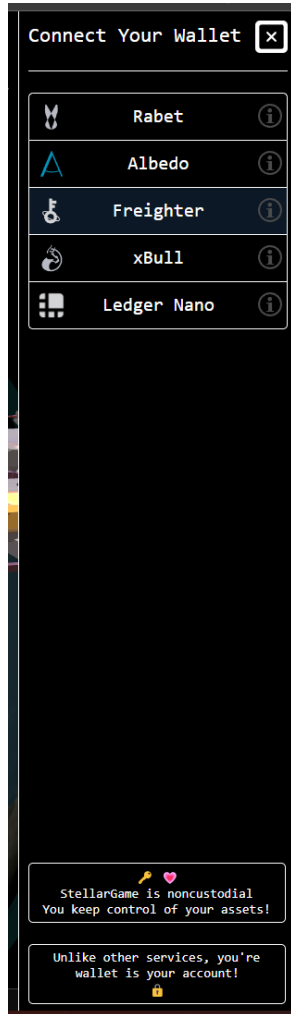
Claim NFT

An API function that claims a specific NFT asset on a specific Stellar account. The asset will now appear in the owned assets page when the user accesses their account.

Proof-of-Concepts

Wallet Manager

Wallet management UI before and after connecting one of several supported Stellar wallets.



Market Interface

Market Interface in development.

