

# Project Report

## SneakerCred – Tokenization of Sports Assets in Gaming

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### Introduction

In the ever-evolving world of gaming, the integration of blockchain technology and non-fungible tokens (NFTs) has opened up new opportunities for gamers to truly own and trade their in-game assets. SneakerCred is a groundbreaking project that utilizes Ethereum's ERC-1155 standard to tokenize sports assets in video games, with a particular focus on NBA2K series. The primary aim is to empower game users to become custodians of their in-game assets, such as 'MyTeamCards,' 'MyCareer' items, and virtual currency, using their crypto wallets. Additionally, SneakerCred enables users to trade these assets on a decentralized exchange.

### Project Overview

SneakerCred introduces the concept of tokenized in-game assets in the NBA2K series, allowing players to trade sneakers for in-game Boost Points. This project also aims to expand the range of available brands for in-game sneakers, enhancing the player experience and customization options.

#### Key Features:

- **Evolving Sneaker Brands:** Players can access various sneaker brands, initially starting with Nike and later expanding to include brands like Reebok and Under Armour.
- **User Interface Enhancement:** A user-friendly interface within the game, particularly in the 'Run the Neighborhood' game mode, enables players to easily shop for new sneakers.
- **Tokenization of Assets:** In-game assets like sneakers and Boost Points are represented as ERC-1155 tokens.

- Decentralized Exchange: Facilitates trading of in-game assets on a decentralized exchange.
- Smart Contracts: Implements robust smart contract architecture to govern token creation, trading, and other functionalities.

## Technology Stack

SneakerCred utilizes a comprehensive technology stack to deliver its functionality:

- Full Stack Ethereum Development: Development on the Ethereum blockchain, utilizing both the smart contract and application layers.
- Solidity Smart Contract Architecture: Implementation of smart contracts, including ERC-1155 and custom contracts for the SneakerCred ecosystem.
- Token Factory Libraries: Inheritance from Token Factory libraries for optimized token creation.
- Web3.Swift: iOS mobile development using Web3.Swift for Ethereum integration.
- 0x Protocol: Utilizes 0x Protocol for asset trading, including Dutch Auctions and multi-asset proxy functionality.

## Smart Contract Architecture

SneakerCred employs a robust smart contract architecture to manage assets, trades, and user profiles. Key components include:

- ERC-1155 Token Standard: Utilized for creating and managing tokenized in-game assets, such as sneakers and Boost Points.
- Metadata Handling: Metadata associated with players, objects, and badges are stored and indexed within the smart contracts.
- Struct Mapping: Mapping of player data as a struct, facilitating efficient storage and retrieval.
- Attributes: Contracts define attributes for players, including their position, points, badges, and trade value.
- Boost Points: Sneakers' associated Boost Power is tokenized as ERC-20 tokens.
- Player Badges: Badge information is stored and managed within the system.

## Tokenization of In-Game Assets

The heart of SneakerCred lies in the tokenization of in-game assets. Users can tokenize their assets, including sneakers and Boost Points, using the ERC-1155 standard. This enables true ownership and transferability of these assets both within and outside the game environment.

## User Experience

SneakerCred enhances the user experience by allowing players to walk their created characters into a virtual foot locker and shop for new sneakers. This is seamlessly integrated into the 'Run the Neighborhood' game mode, providing players with a realistic and engaging shopping experience.

## Benefits and Objectives

The primary objectives of SneakerCred are:

- Empowerment: Give players true ownership of in-game assets.
- Customization: Expand the range of available sneaker brands and customization options.
- Decentralization: Enable asset trading on a decentralized exchange.
- Realism: Provide an immersive shopping experience within the game.

## Conclusion

SneakerCred is at the forefront of tokenizing in-game assets in the NBA2K series, bringing a new level of ownership and tradeability to gamers. By leveraging Ethereum's ERC-1155 standard and a robust smart contract architecture, SneakerCred aims to revolutionize the gaming experience. As the project continues to evolve, it promises to enhance player engagement and redefine the relationship between gamers and their in-game assets.