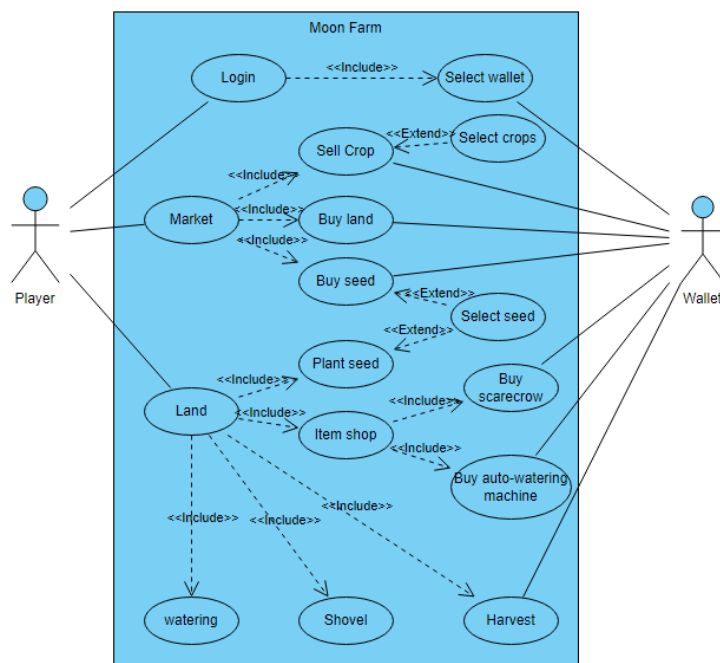# Moon Farm

Concepts & Background

We are a group of individuals who share a common interest in game development and blockchain technology. Our goal is to enhance the value of Non-fungible Tokens (NFTs) and maintain the playability of games by integrating NFTs into gaming experiences. Instead of perceiving NFTs solely as profit-driven assets, we strive for them to be acknowledged as significant badges of achievement and recognition.

During Summer-HackaDOT 2023, our team opted for topic 4-unique to undertake the development of an NFT game by using the Unique Network Software Development Kit (SDK).

The Unique Network SDK brings a lot of benefits. To develop our game, Moon Farm, we opted to utilise the Software Development Kit (SDK) package. It enables us to effortlessly incorporate all the functionalities of the Unique Network into our web3 game application, without the necessity of directly interacting with low-level API while it is a compact package, occupying minimal space. It provides us with the capability to create nestable, dynamic collections and fungible tokens, making it an invaluable tool for our game development process.

Coding flow

Game's Details & Flow

Within Moon Farm, players must possess a Polkadot wallet in order to procure our game tokens by native currency on Unique Network. At the onset, players need to purchase farmland and seed. After sowing the seed on the farmland, the seed will gradually mature into specific crops through designated interval watering. Subsequently, players are granted permission to harvest the crops and exchange them for game tokens.

For the price, one farmland is worth 10 Moon Farm tokens, while the seeds for carrots and strawberries cost 3 tokens and 5 tokens, respectively. Additionally, the scarecrow and auto-watering machine are both priced at 10 tokens each.

Each player is permitted to own a maximum of six farmlands. The automatic watering machine mitigates the risk of seed not growing up due to leak of watering, while the. These features serve to enrich the gameplay experience and provide players with a variety of strategies to enhance their success within the game.

To heighten the game's level of difficulty, we have introduced an additional challenge in the form of crows. These creatures have the ability to diminish crop yields. To address the crow predicament, players can acquire a scarecrow and position it on a fixed location of their farmland to ward off the crows. In addition to scarecrows and seeds, players have the option to purchase additional items such as farmland, automatic watering machines, and fertiliser.

NFT In-Game Application

In Moon Farm, we have integrated various NFTs in different forms, including farmland, seeds, crops, scarecrow, and automatic watering machine. These NFTs encompass three main types: nestable, dynamic, and fungible. Furthermore, certain features within the game may exhibit a combination of these NFT types.
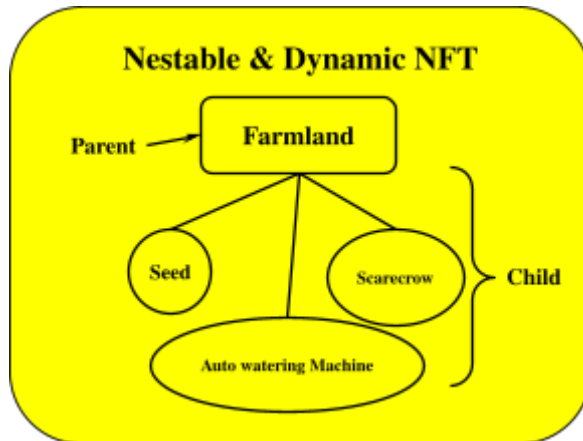
The nestable NFTs are capable of containing other NFTs within their structure, allowing for a hierarchical or nested arrangement. Moreover, dynamic NFTs have the ability to change and evolve over time. The advantage for a NFT containing both elements is that the players can see the farmland's NFT as a hole with items and not just an empty farmland.

The above shows the nestable and dynamic NFT in Moon Farm. We set the farmland as parent NFT and allow players to nest the seed, scarecrow and auto watering machine to the farmland. However, the child cannot nest with each other. The actions such as watering, harvesting, and implementing the automatic watering machine and scarecrow will impact the attributes of the farmland's NFT.
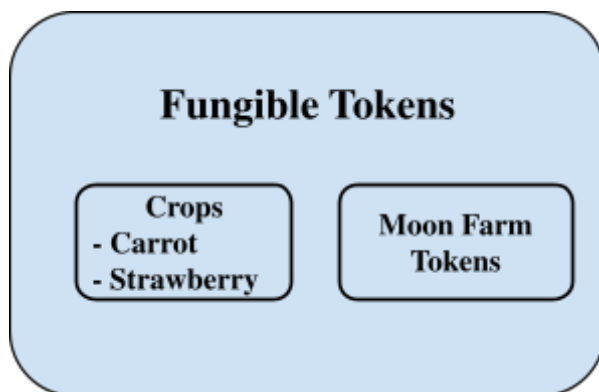
Moon Farm tokens, our in-game native currencies and the crops are tokenized as fungible tokens. The players are allowed to trade the crops for Moon Farm tokens and Moon Farm tokens for seeds or farmland or other items.

Problems

1. Ownership of the Game Items

   1.1. The game items do not belong to the game player after all.

2. Transparency

   2.1. The trading between players and the system, or between players themselves, is not open to everyone.

   2.2. The lack of transparency in trade can create an imbalanced gaming ecosystem.

3. Security of Game Items

   3.1. Hacking for game items is common in the gaming world.

4. NFTs are commonly considered as digital artwork that can be purchased.

Solutions

In our project, to address the aforementioned issues, we have implemented tokenization in Moon Farm. By utilising tokenization technology, all game items are in the form of NFTs except seed and Moon Farm tokens, which means that everything gained by the player belongs solely to them. Additionally, the tokenization technology has made the game more secure, transparent, and accessible to markets.

Secondly, we integrate the SDK into Moon Farm. The SDK provides us with the capability to create dynamic NFTs and fungible tokens that can be nested within each other. Additionally, with the SDK, we can create NFTs with various attributes that players must earn. This enhances the value of the NFT beyond simply paying for it.

In conclusion, tokenization has been implemented in Moon Farm to make the game more secure, transparent, and accessible to markets. The SDK has been integrated to create dynamic NFTs and fungible tokens that can be nested within each other, enhancing their value beyond just paying for them.

Milestone

As for the future of Moon Farm, we plan to have different updates in different periods of time.
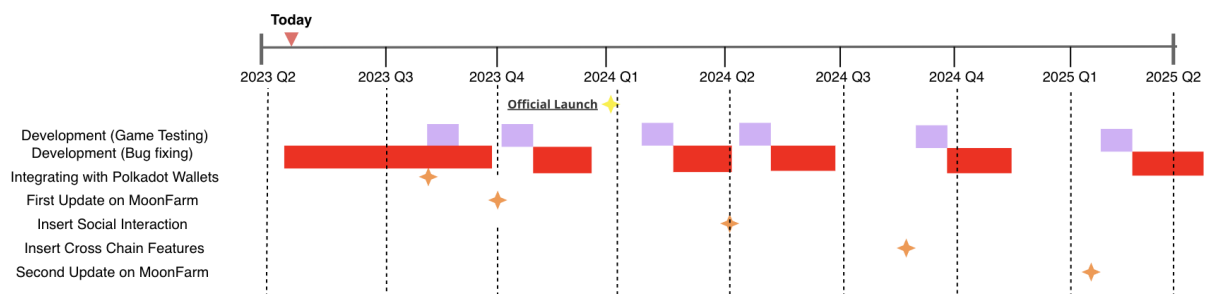
Today - 2023 Q3

➢ Focusing on the development (Debug) of Moon Farm

2023 Q3 - 2023 Q4

➢ Integrating Polkadot Wallet at between of two quarter

➢ Following up on beta test

➢ Updating Moon Farm (First)

○ Adding (New Features: Seasonal Effect; More Seeds; Fertilise)

○ Improving the Game UI

➢ Having game testing (Beta test) before and after the integration of Polkadot Wallet and update

➢ Debug

2023 Q4 - 2024 Q1

➢ Moon Farm Officially Launch on Unique Network Mainnet

➢ Testing and debug

2024 Q2 - 2024 Q3

- ➢ Inserting Social Interaction
  - ○ Friendship System
  - ○ Visiting
  - ○ Stealing
  - ○ Destruction
  - ○ Helping
  - ○ Friend Guarding
  - ○ Security Guard
  - ○ Village System
- ➢ Game Testing and debug

2024 Q3 - 2024 Q4

- ➢ Inserting Cross Chain
- ➢ Game Testing and debug

2025 Q1 -2025 Q2

- ➢ Platforming Second Update
  - ○ Adding animals Features
    - ■ Cows, Pigs, Chickens and Bees
  - ○ Secondary Industry
    - ■ Factory or Bakery
    - ■ Use raw material to produce new product
- ➢ Testing and debug