

Granular Lending



A new way to loan
and borrow sandbox nfts

Granular Lending Whitepaper

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As Part of;

Encode: Hack the System Hackathon 2021



Abbreviations

API	Application Programming Interface
Defi	Decentralised Finance
GL	Granular Lending
NFT	Non-Fungible Token
P2P	Peer-to-peer
TSB	The Sandbox

Abstract

With the recent explosion in defi projects, we have seen an increase in both NFT's and in borrowing and lending crypto-based liquidity. This project aimed to bridge these niches together and create an entirely new ecosystem, of both borrowing and lending NFT's. Want to show up to a metaverse-based birthday party, in the freshest NFT wearables, but don't have the liquidity to buy them? Want to show off to your friends by having your meta-house full of the coolest artists' statues, but only for the day they're visiting? This is the project for you!



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1. The Sandbox

1.1. Overview



Reading from The Sandbox's Whitepaper, TSB is self described as "The Sandbox is a virtual world where players can build, own, and monetize their gaming experiences in the Ethereum blockchain using SAND, the platform's utility token". It's tipped as one of the most anticipated meta-verses with ambitions to create a "deeply immersive metaverse in which players will create virtual worlds and games collaboratively and without central authority". Starting off as a mobile game called "the sandbox", it was based around creating elements and materials from other core elements. After being downloaded 40 million times as well as having over 1 million active monthly users and even having a sequel called "The Sandbox Evolution", the property was bought out in 2018 by Animoca Brands to be used in a voxel-style Blockchain version of the game. Since then the core team have been hard at work developing out The Sandbox Ecosystem to the point now where they have created a cryptocurrency of their own along with ASSET and LAND NFTs on top of a game maker to create games and VoxEdit, a voxel-based editor allowing anyone to create their own NFT's. To read more about this transition and the history of TSB, this article is a great resource <https://medium.com/sandbox-game/the-evolution-of-the-sandbox-762f0023349>

1.2. SAND and ASSETS

SAND is the cryptocurrency that is used by TSB, it is the main utility token of TSB's ecosystem, used for all transactions and interactions involved with TSB. We felt it was appropriate to also utilise the SAND currency as the main currency used in this project, although the gas fees will be paid in the usual Eth.

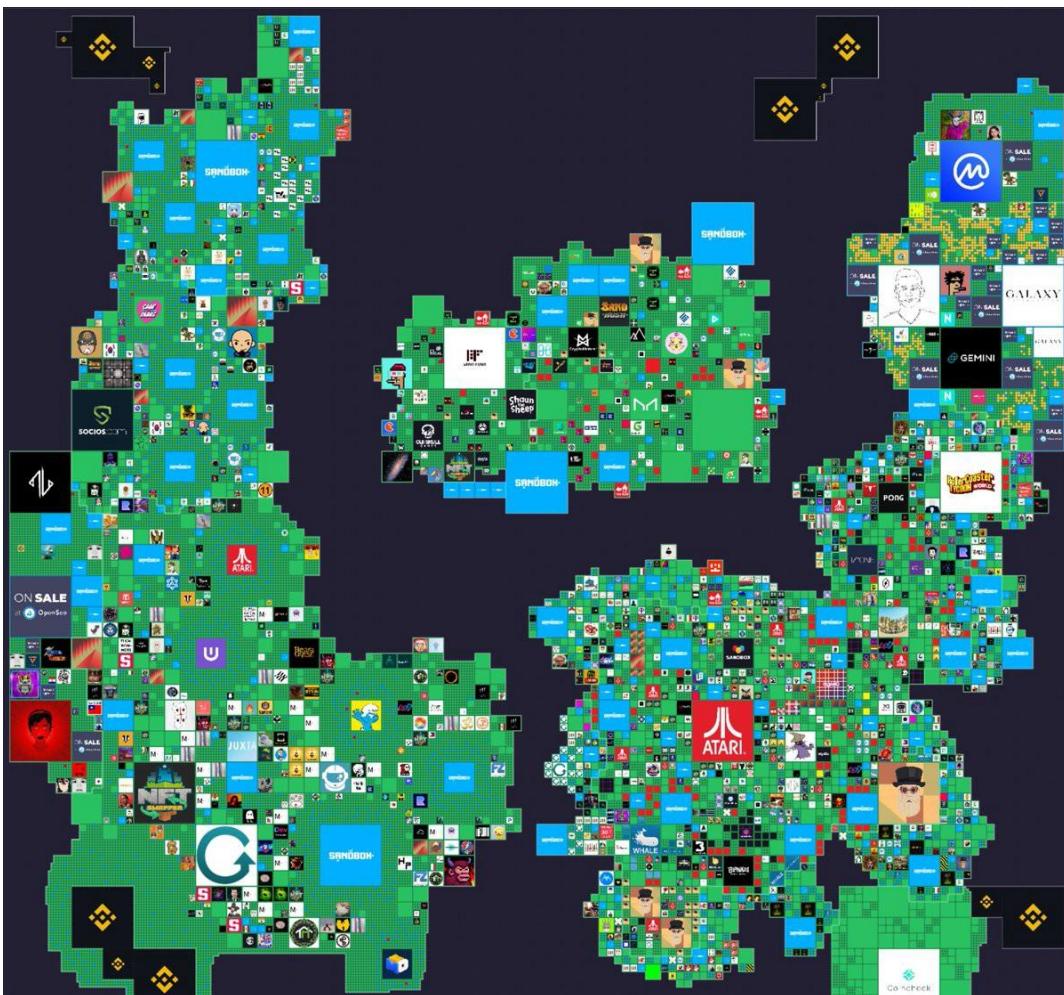


1.3. ASSET Types

There are various different types of ASSETS within The Sandbox ecosystem, our project is compatible with all of them but here we have outlined some specific reasons why each asset type may be lent.

LAND

LAND is the NFT's that TSB are planning to be used as the land that makes up the metaverse's digital spaces, this 408*408 grid or 166,464 LANDS are to be user owned land that can be used for a number of different purposes including hosting games, curating and showing art galleries as well as just creating places to be able to show off and meet with your friends.



Due to using the ERC-721 Token standard, GL currently doesn't support lending and borrowing of LAND NFT's, although this functionality could be added in the future.

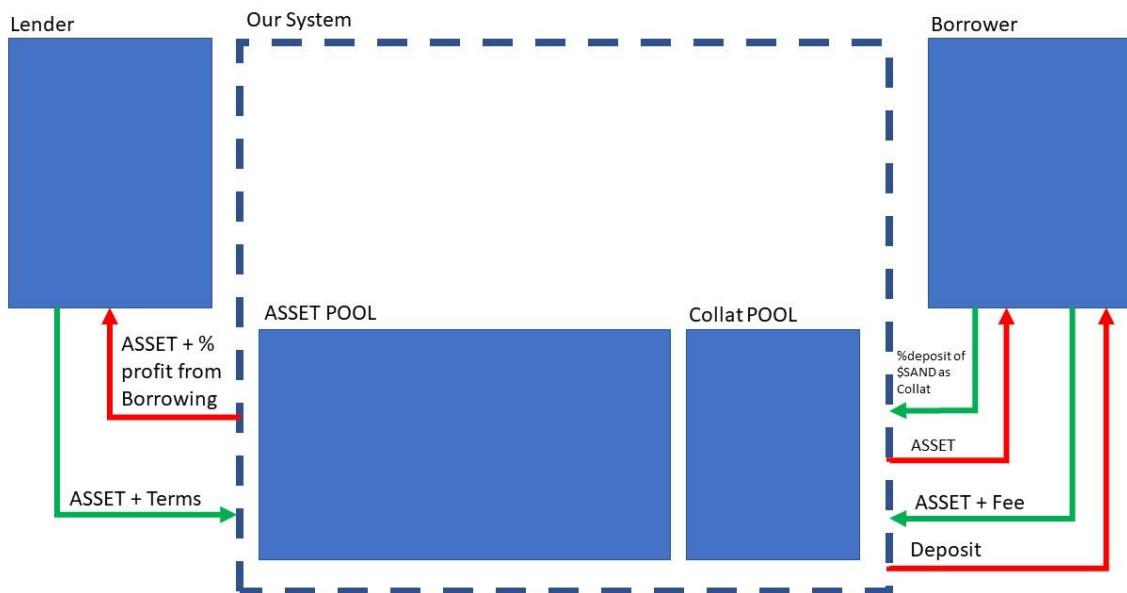


ASSETS

From the inception of this project, we knew that ASSETS would be our primary focus, not only due to their interesting use of the ERC-1155 token standard, but also the rich metadata associated with each ASSET. Each ASSET has a unique 3D model and are split into various types, including Equipment and Entities. Players can wear equipment ASSETS they own in-game. This vastly expands gameplay - a player struggling to defeat a difficult enemy might invest in a more powerful sword.

2. Base Idea of Granular Lending

2.1. Overview

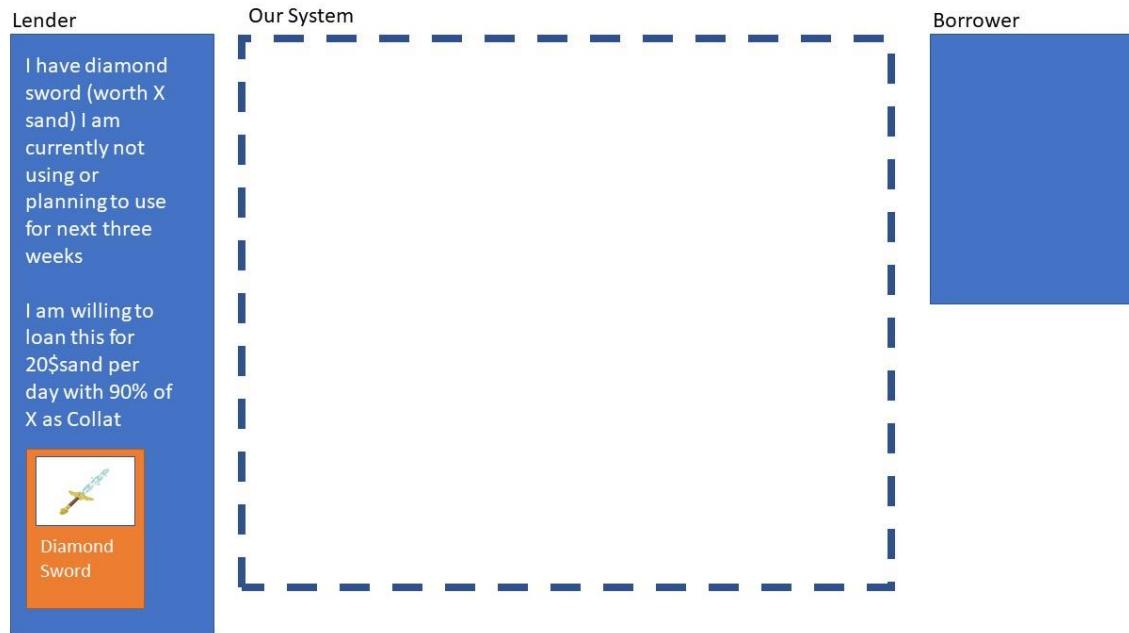


The basis of the idea can be boiled down to this diagram, the basic idea is to be a middle-man style service to allow both borrowing and lending of any of The Sandbox's NFTs. it currently would work by using a basic middle escrow wallet to hold nfts that are currently being offered for loan but haven't been loaned out yet.

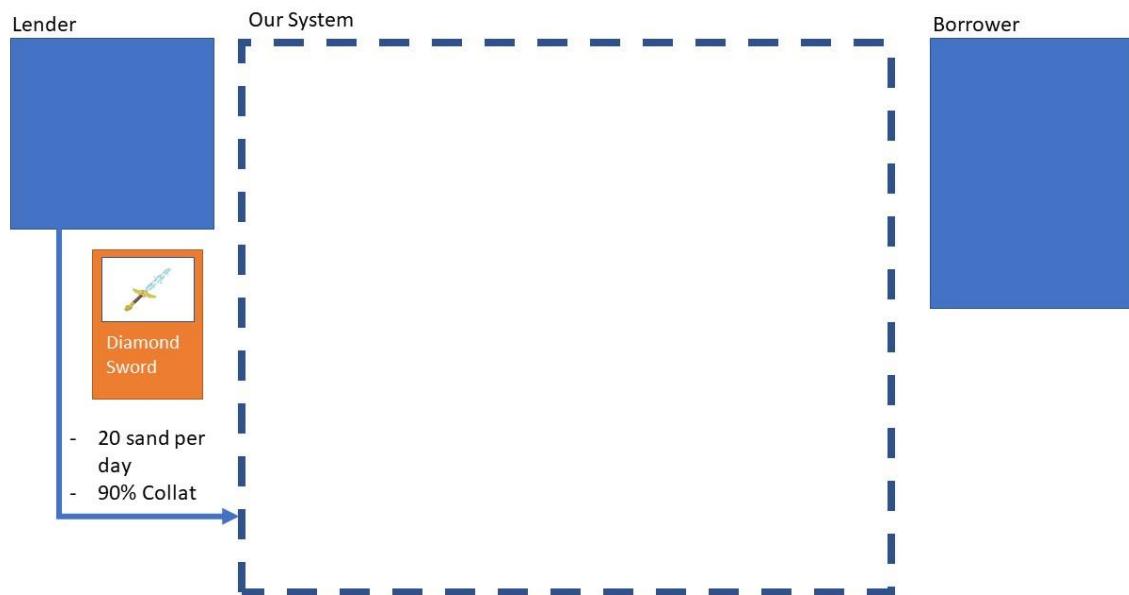
We also hold the deposits we hold as collateral in this wallet. Although this diagram may seem confusing, in the next section we will explore an example use case and this will show the process the funds & NFTs go through, which should clear up any confusion.



2.2. Breakdown of the process as an example use case



Lets say a hypothetical user, Alice, has a diamond sword that they aren't planning on using in the next three weeks, they think it's worth X SAND and are willing to loan the item out. They decide they would like 20 SAND per day of borrowing, and are willing to take a deposit of 90% of X SAND as collateral.



This enters our “system”, the NFT is sent to the escrow wallet and the terms of the leasing are inputted into our centralised database.



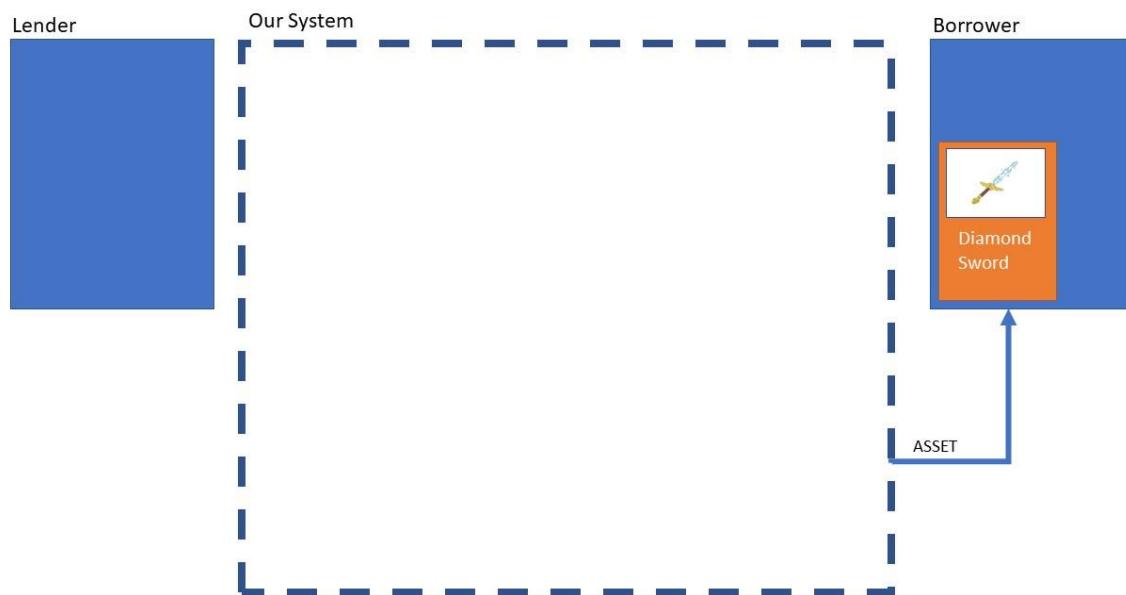
This is then shown on our website as available to loan, along with the conditions of borrowing the NFT.



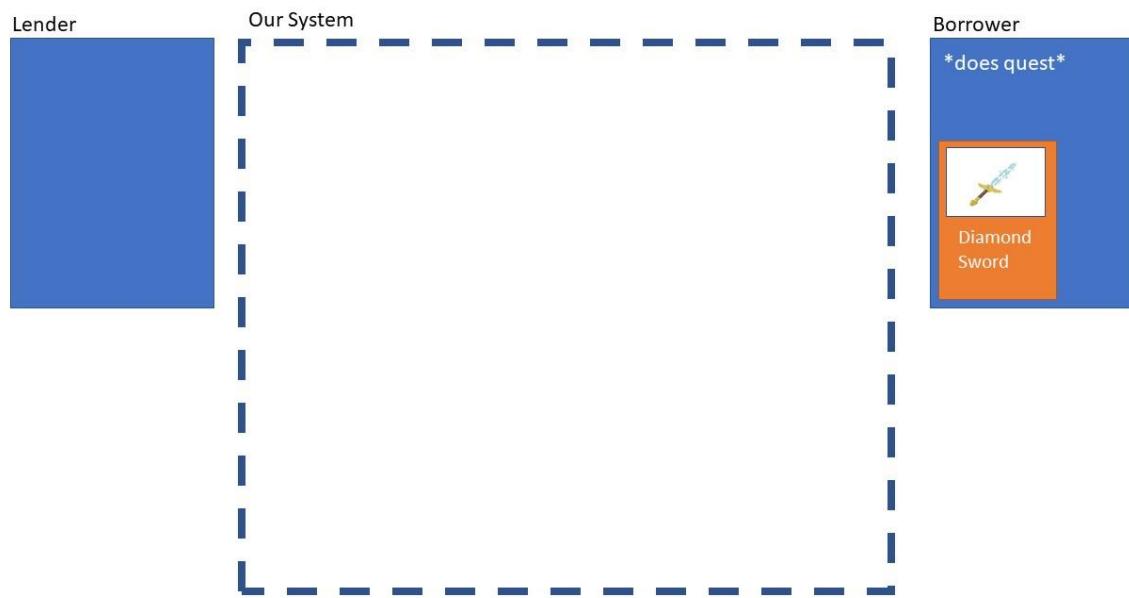
Another user comes along, let's call them Bob, they don't have enough money to outright buy a diamond sword, but they are in need of it to finish a quest. Bob does however have 90% of the value of the sword and is willing to spend a small amount (20 SAND) while they are using the sword to complete the quest.



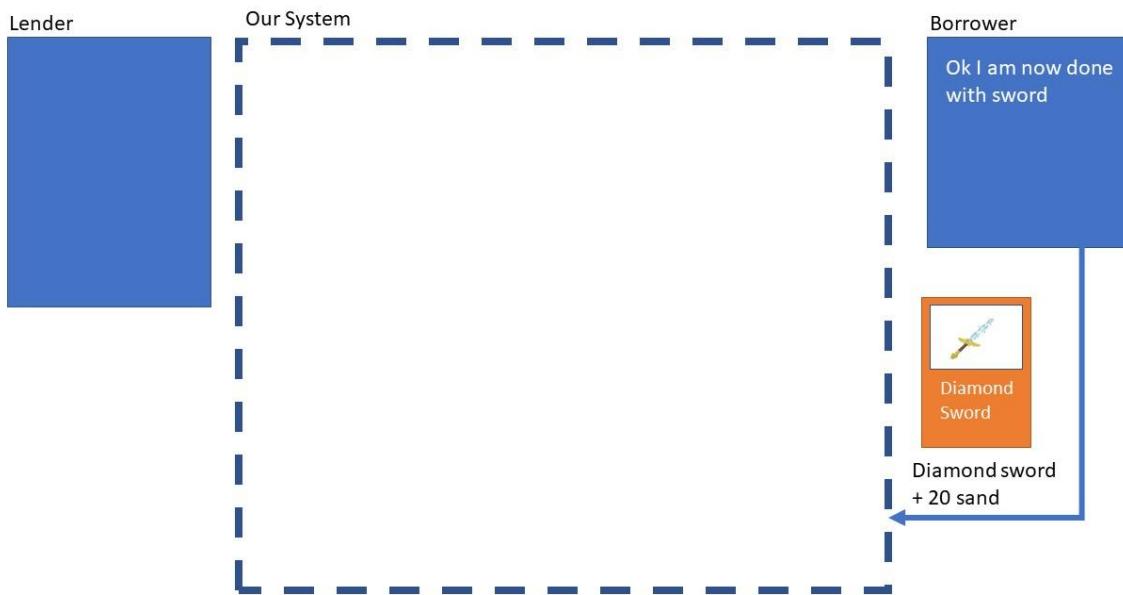
Bob agrees with these terms, and sends a deposit to the middle escrow account.



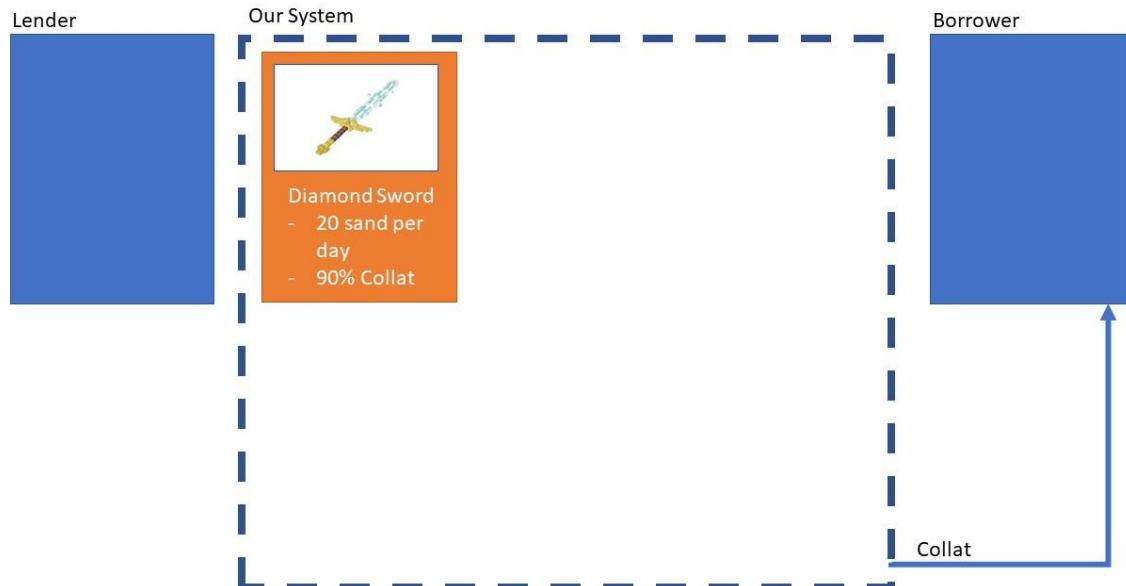
The NFT is then sent to Bob's wallet for him to use.



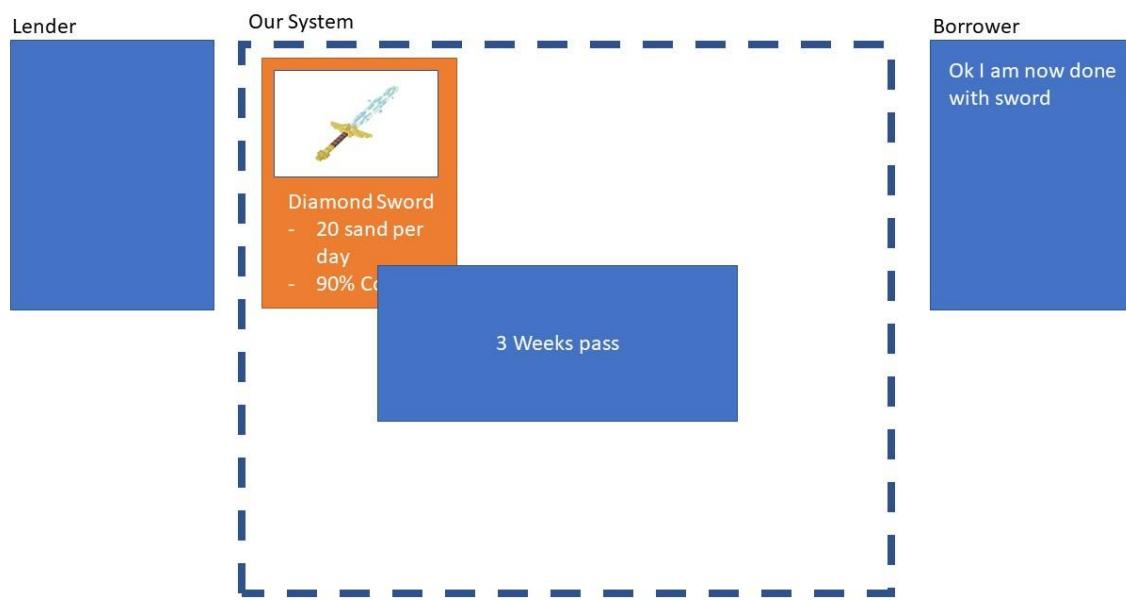
Bob is then able to complete the quest he needed to sword for.



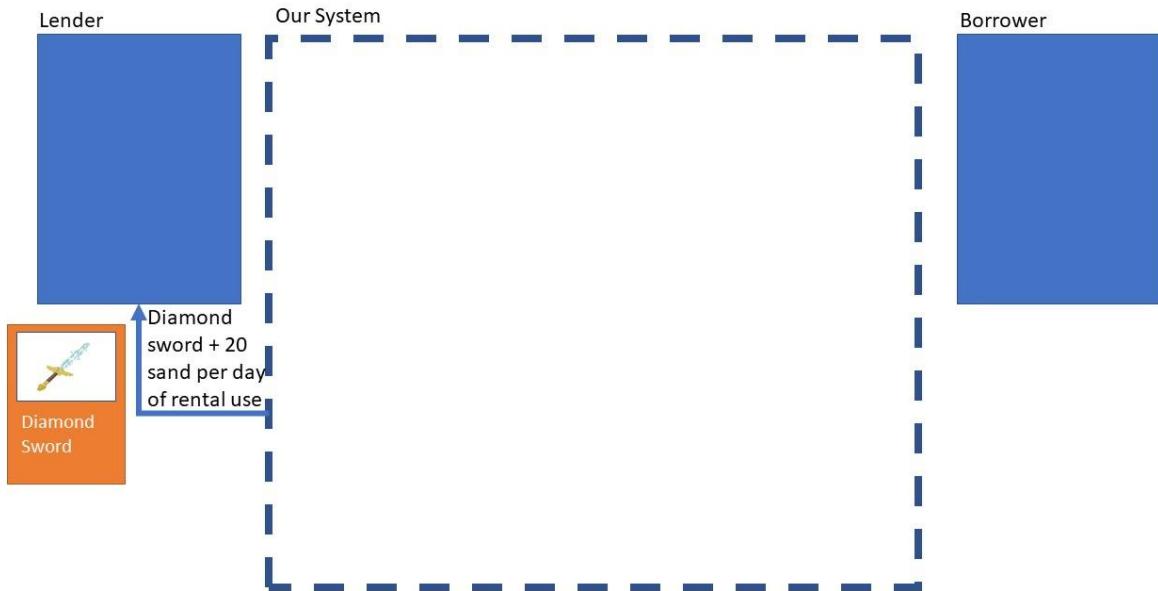
Once he has finished using the sword he returns it, as well as paying the small fee for usage. (in this example the payment is made along with the sword, in the final version it is more likely that the cost of usage will just be deducted from the deposit before the deposit is returned.)



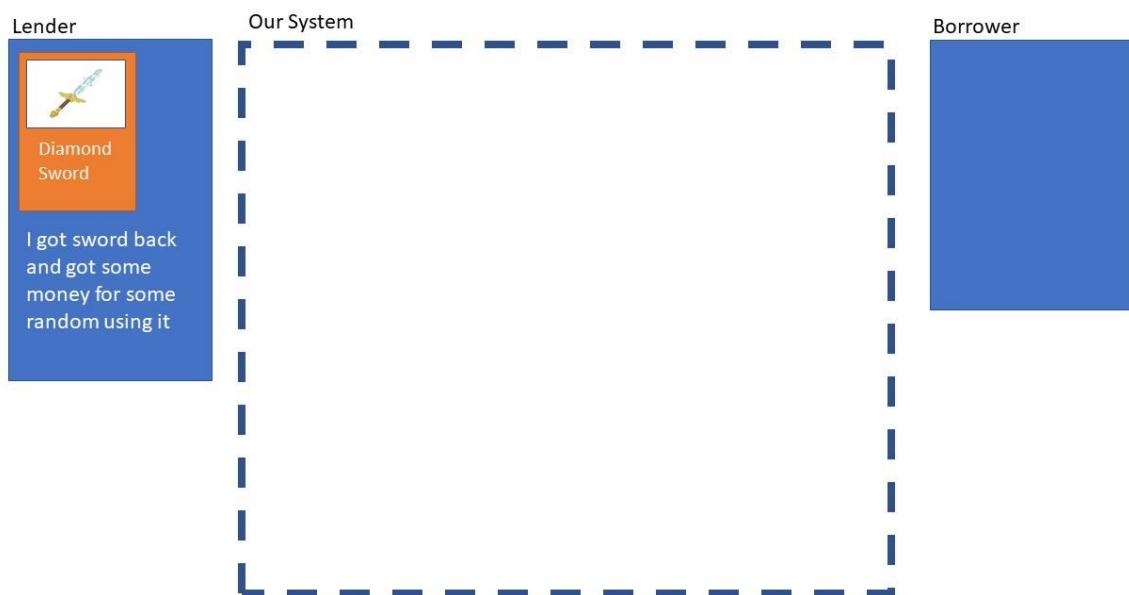
The deposit is then returned, (as mentioned above this will more likely be deposit-cost returned as this saves on a small amount of transaction fees).



The sword continues to be available for lease for the remaining time that Alice selected, three weeks in this case. The sword can obviously be loaned out by multiple users, multiple times over this time.



Once the time is up, the sword will be returned to the original owner, along with any earnings. Granular Lending will take a small percentage of this for using the service (1.15%), this will help cover operating costs as well as help towards further development of the project.

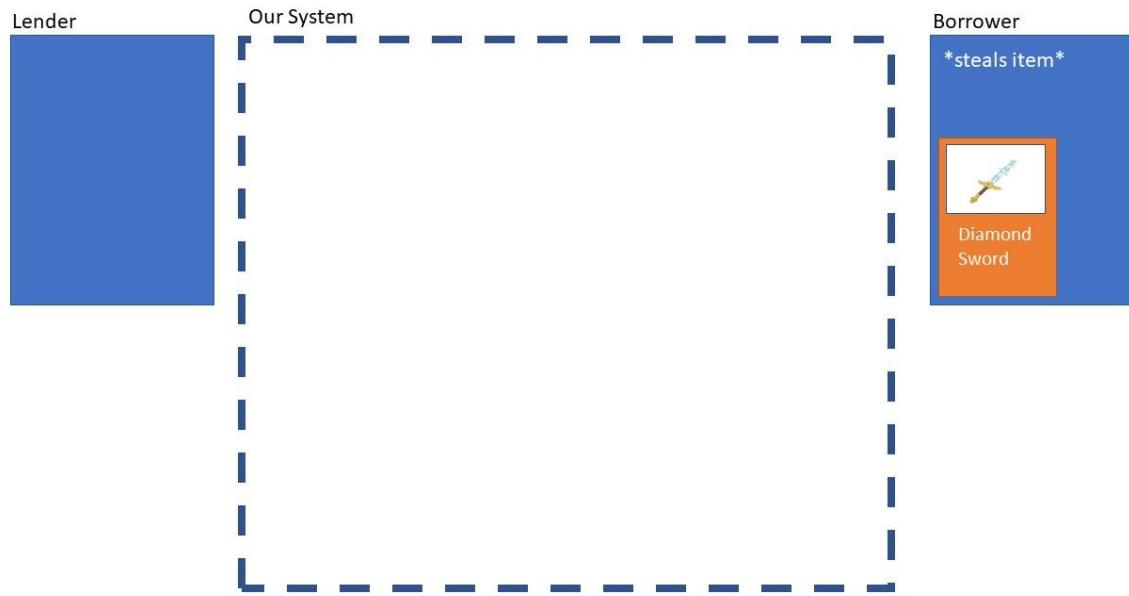


Here you can see Alice is happy since they have made some SAND from an NFT that was going to be unused anyway.

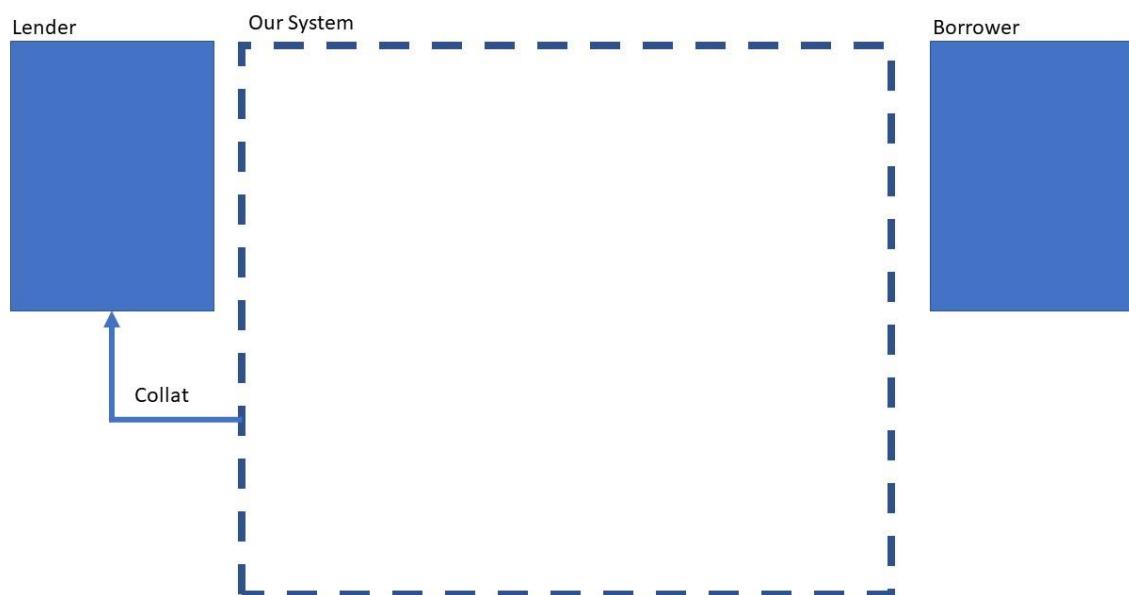


2.3 What if an item is stolen?

So lets say Bob had just taken out the item from the pool again, so we are at this point.



Perhaps this time Bob isn't feeling as nice so after completing the quest, he takes the item for himself. Well as long as he returns it within the 3 weeks Alice had put it in the pool for, he is still within the lease terms and will just have to cover the cost for the days he loaned the item.





If he went beyond the time limit Alice set, then his deposit would be sent directly to Alice. Granular Lending would take no cut and the only fees that would be incurred are transaction fees.

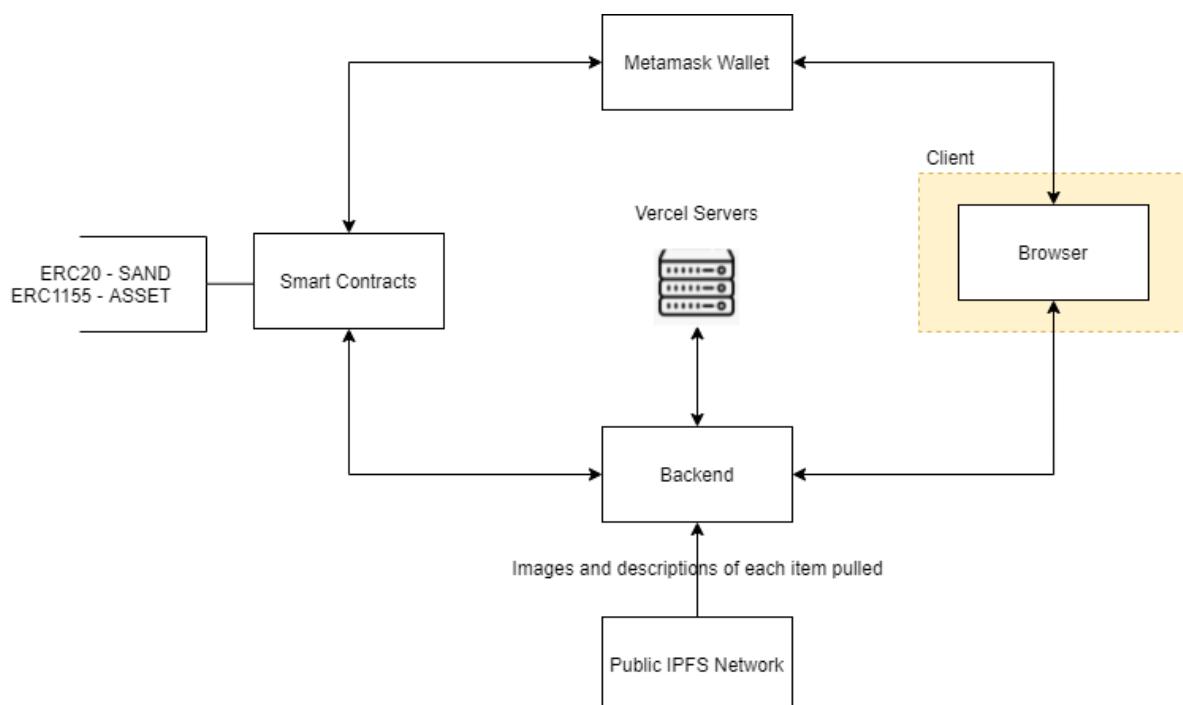
2.4 Future ideas-

In the future we would love to have a more decentralised model, where there is no holding middle escrow wallet, and perhaps both lender and borrower are interacting directly with each-others wallet addresses, perhaps even giving the lender a token of our own to represent the item they have put into the pool.

A second idea we have also had during the development of this project is the idea of “wrapping” the leased items as they pass through us in another contract, meaning leased items could be restricted in their functionality, perhaps if an item has durability, it could be auto returned to the original owner if a certain durability threshold is met or perhaps a lease item could not be resold on, etc etc. The possibilities of the continuation of this idea excite the entire team, yet we feel they would be impossible to implement in the scope of this hackathon.

3. Deep Explanation of the Backend

3.1. Services used



This is the basic outline of the way that project is currently laid out, albeit extremely centralised, we hope to improve on this in future and work towards a more decentralised hosting option. The site relies on the Vercel servers for



hosting of the app, and uses the React library, this allowed us to create a MVP extremely quickly as well as being able to change and swap things out easily and quickly.

3.2. Development Services used

Due to all being in different places around the world, we took advantage of online tools for both collaboration and communication. We used Slack for the main source of communication, along with Zoom video calls when we felt it was necessary. We created a GitHub repository to hold all of our source code, which then integrated with Vercel very easily, allowing us to test and redeploy our code and project very quickly.

4. Timeline & Roadmap

29th March 2021 - Hackathon begins hacking phase

1st April 2021 - Team assembles - First calls, project begins

Project calls throughout this time, project advances towards tasks we set internally

30th April 2021 - Domain Purchased, V0.1 Site live

--Now--

Hackathon win!

--Future--

End Summer 2021 - Wrapping of items working, possibility of work starting on decentralised lending/borrowing

Winter 2021 - Hand control over to DAO, hopefully have decentralised hosting and lending and borrowing live etc

5. The Team

Meeting through the hackathon, we have been working remotely together through tools such as Github, Slack and Vercel.

Jake Galvin, Leeds UK - Team Lead

Currently a second year computer science student at the University of Leeds, Jake is also is co-president of LUUCABS (Leeds University Unions Cryptocurrency and Blockchain Society), has been involved with crypto since mining bitcoin back in 2015 and is currently interning at a local startup that specialises in blockchain UX.

Fraser Scott, Edinburgh UK - Backend

Fraser is a fourth year Computer Science student and the president of the University of Edinburgh FinTech Society. He hopes to undertake a blockchain-focused Masters degree and will be interning this summer as a smart contract developer at Kleros, a decentralized arbitration service.

Harish Pillarisetti, Telangana, India - Frontend



Harish is an experienced Software Engineer with a demonstrated history of working in the computer software industry. Skilled in Vue.js, React.js, MongoDB, and Nodejs. Strong engineering professional with a Master of Science - MS focused in Advanced Computer Science from Cardiff University / Prifysgol Caerdydd.

Conclusion

We hope what we have created and displayed so far excites you about the future of not only the individuals in the team but also Granular Lending as a project itself, we invite you to experiment with our service on the test network Ropsten as we finalise our contract code and confirm it will work correctly on Mainnet.