

# Dynamo Final Team Project

**Status:** Final Business Plan

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## Part I: Executive Summary

The online-gaming industry has become a global ecosystem of hundreds of millions of players coming together to both play against each other, but also exchange items with one-another in-game marketplaces. Major gaming platforms have their own marketplaces facilitating the buying and selling of virtual gaming items that can then be used inside games. In 2020, these marketplaces generated \$33 billion in revenue. Such lucrative products need to continuously be streamlined, revamped, and innovated upon to make sure that gamers are getting the best experience. After analyzing the user journey in today's gaming marketplaces, we highlighted various inefficiencies (e.g. high transaction fees, siloed marketplaces, differing Foreign Exchange rates) and have developed a solution to solve them - we call it Dynamo!

Dynamo leverages smart contracts, NFTs, and APIs, to provide gamers with a marketplace where they can trade online game items from various games all in one place! By leveraging blockchain technology, transactions are instantly settled, there is one common currency, and transaction fees are minimized. Our smart contracts offers fast, transparent, secure, and reliable transactions between buyers and sellers,

We're excited to show you our platform, our smart contracts, and walk you through our user journey.

## Part II: Problem Statement

### Introduction

The online-gaming industry has expanded to become a global ecosystem of millions of players interacting with each other. To capitalize on this interconnected network of players, popular online gaming platforms such as Steam, OP.GG, Itch.io, and Battle.net have created marketplaces where players from around the world can trade items such as skins and weapons from within the game. These marketplaces have become one of the most lucrative avenues for these platforms - in 2020, online gaming marketplaces generated \$33 billion in revenue.

This revenue isn't just for the gaming platforms, but a lot of players actually base their income around flipping these types of items (they buy a weapon for a specific price, wait till it appreciates, and then sell it at a higher price). With so much money involved for both players and the platforms, we believe that these marketplaces need to be as efficient as possible.

After studying the current user journey in the marketplace from both a buyer (a gamer who buys an item in the marketplace) and seller (a gamer who puts an item for sale on the marketplace) perspective, we've found major areas that we believe blockchain/smart contracts can solve for.

## Problems With Current Gaming Marketplaces

Analyzing the user journey in the current gaming marketplace, we've found a couple of areas that we'd like to highlight:

- A. ***Gamers don't just play on one website.*** There are certain games that they'll play for a couple of hours on one gaming platform (e.g. Steam) but then they'll switch over to another gaming platform (e.g. Itch.io). Each one of these gaming platforms will have their own siloed in-game marketplace. For example, there is no one marketplace that contains items for both games in Itch.io and Steam. This causes friction for gamers as they have to switch between marketplaces to get the items that they want - if a player plays 10 video games in total, it's inefficient for gamers to switch from different gaming marketplaces to manage all the virtual assets.
- B. There is ***no common currency*** that players share within the gaming marketplaces, everything is in the players local currency. If I am in the US, I'll see the price of an item in USD, but if I'm in Europe I'll see the price in Euros. This can lead to a couple of problems:
  - Foreign Exchange rates on the purchasing of the items can mean I might be buying an item for more than it is actually listed - the converse is true for sellers (they might sell an item for less than they actually put it for sale). This happens to consumers all the time when they travel, think of when you go to buy a bag when you are traveling and have to convert the foreign currency to your local currency. You might be using an exchange rate that's different from the seller's exchange rate - they could charge you more because of that or (hopefully) less.
  - Players want to operate on one common currency so that there is transparency in pricing.
- C. ***Slow settlement times*** means buyers can't buy the items directly and sellers can't withdraw their earnings instantly. To elaborate, let's go over the buying and selling process in today's gaming marketplaces.
  - First from the buyer's side. Let's say I'm in the marketplace for Steam and I find an item that I want to buy to use in one of the games. If I want to buy it, I have to have money in my in-game wallet. To do this, I have to deposit money into the

wallet using a debit or checking account. However, these transactions take around 2-3 days to settle because banks are notoriously slow at clearing transactions. That means it takes 2-3 days for my money to be deposited into my account, and enables me to buy this specific item. By the time I get that money, the item may have already been sold or the price could have gone up.

- Now let's look at the seller's side. Let's say someone has purchased an item for me and I'd like to withdraw that money from my in-game wallet into a bank account so that I can actually use this money in the real-world. As we mentioned above, it takes around 2-3 days for this transaction to clear with the bank, and therefore, 2-3 days before I can actually use that money.

D. Crypto as a payment method is on the rise, while there are ***no major gaming platforms currently accepting crypto as a form of payment.***

These problems have an impact on **both** gamers and the gaming companies themselves. Globally, gamers spend an average of 8 hours a week playing online-games, with such a large time investment, gamers need the best experiences possible - their in-game experience is crucial. Gamers are impatient, they want new games to come out everyday, they want access to them fast, and they want innovation in every avenue of their experiences. Gaming sites need to keep up with this innovation or they will lose customers. Part of this innovation includes analyzing and fixing the above problems so that they can retain customers. Luckily, Dynamo offers such a solution.

## The Product Offering

*Product Vision: Creates a decentralized virtual gaming items marketplace that enables truly peer-to-peer, secure and transparent trades.*

By analyzing the processes in today's current in-game marketplaces and highlighting problem areas, we've developed a solution to solve these issues. We believe our product offering will help streamline gamers' ability to buy and sell items, improve their overall experience, and therefore enable the gaming platforms themselves to retain and even increase their customer base.

We've called our product Dynamo! Dynamo is an NFT marketplace, where each NFT represents an actual item from a traditional gaming marketplace. Dynamo helps millions of gamers worldwide trade their virtual gaming items instantly with Eth. Through the use of API's and smart contracts, gamers can mint their items from the Steam marketplace into an NFT in the Dynamo

marketplace. Gamers can browse through items and buy what they like using their connected Metamask wallet. Once sold, the information will be relayed back to the gaming platform who will then swap the item from buyer to seller. Let's take a look at what this process will look like: Let's say I am on the gaming platform Steam and I want to sell a certain item. Once I put the item for sale on Steam and as long as my Steam account is linked to my Dynamo account, the API will send a signal to our marketplace, our smart contract will execute, and mint this item as an NFT to be placed into our marketplace. We now have a digital representation of the in-game item in our marketplace. The NFT will be tagged with the User ID of the player's Steam account so people will know who the seller is. A buyer will go into our marketplace, find the item and purchase it using Eth (the transaction will be facilitated by Metamask). Once this transaction is completed (validated by miners), our API will signal to steam that the transaction took place. Steam will then send the item from the sellers account to the buyers account.

Dynamo's innovative use of smart contracts allows us to provide gamers and gaming platforms with the following:

- A. One common marketplace for gamers to view all items from different games. Because we are using API's, Dynamo will be receiving inputs from various sites - meaning gamers will have one common marketplace where they can buy/sell items from various gaming platforms. No more siloed marketplaces!
- B. Since we rely on the blockchain for our payments instead of relying on banks:
  - We have instant settlement times! Unlike before, if a buyer sees an item that they like, they can purchase it instantly using their Metamask wallet - they don't have to wait for any bank to clear their transaction. Similarly, a seller instantly gets Eth into their metamask wallet, meaning they can use this eth directly on any other website that accepts Eth as a form of payment - they don't have to wait till their money gets deposited into their bank account like before.
  - Lower transaction fees
  - High security of payments
  - Tax-free payments
  - Our marketplace using crypto payments! A new form of payment that is one the rise, especially with gamers (they are the ones that are pushing forward Web3 and the metaverse).
- C. Uniqueness of NFT's - players have full ownership of the items they own in terms of buying, selling and earning.

- D. We can provide a truly global marketplace that uses one clear currency - Eth. We therefore solve the problems mentioned above regarding different Foreign Exchange rates and no common pricing scheme.

## Compare with current solutions

We believe that our greatest threat is current gaming marketplaces - it can be hard for people to change the way they do things especially if they've been doing it for a while. Therefore, we've aggregated the information previously discussed, to highlight the inefficiencies crippling these marketplaces and how Dynamo can solve them.

- Gaming platforms have their own silhouette marketplace where trades can only be viewed and conducted within their platform - imagine how time consuming switching between the marketplaces (logging out of one game and into another) can be if you're playing 5+ games. Dynamo offers one common marketplace for all gaming items by pulling from various gaming platforms using API's.
- Virtual gaming items' unit price can go up to 5 digits. The gaming platforms themselves lack the capability to ensure the fairness, transparency and security of such a big transaction amount. Dynamo solves this by leveraging the security features of blockchain.
- Current marketplaces use payment mechanisms (usually debit/credit cards) that incur large transactions for each transaction made. Crypto eliminates these large transaction fees.
- Current marketplaces do not offer instant settlements (buyers and sellers do not get to complete their transactions in real-time). Dynamo offers instant-settlement through the use of smart contracts.
- Current marketplaces do not have one global currency - Dynamo uses Eth and therefore one common currency that all players can base purchases on. No more varying exchange rates and slippage!
- We're tax free! Trading conducted through the existing gaming platform is subjected to virtual tax, which is a proposed US tax on internet gamers for items bought or traded solely within the virtual world. In contrast, blockchain transactions are tax free to all traders, which is beneficiary to items with high pricing.

While NFT gaming marketplaces do exist, they are marketplaces for games that are built entirely on the blockchain. This means that these marketplaces will not have items for games on the most popular gaming platforms (e.g. Steam). All they're really doing is creating yet another silhouette marketplace. Dynamo merges together these worlds by using APIs and smart contracts to provide the benefits listed above.

## Part III: Market Analysis

The target market for this project is the global online game players who interact with in-game marketplaces (the buyers/sellers of virtual game items, such as skins and weapons). Meanwhile, players should have ownerships or intend to have ownership of cryptocurrency.

### Market Size (in USD) of Transactions Passing Through Dynamo

As of 2020, the global gaming Industry is estimated to be worth around \$159.3 Billion in revenue. We recognize that the gaming industry has multiple revenue streams such as advertisement, actual game purchase, and in-game purchase; our business project wants to specifically target the market size of in-game purchase, which we've evaluated based on a report from Statista. According to Statista, global video gaming audiences spent an approximate 54 billion U.S. dollars on additional in-game content in 2020<sup>1</sup>. Nevertheless, only about 1% of the 54 billion will be conducted through cryptocurrency transactions<sup>2</sup>. Therefore, the global market size in dollars of the transactions that could pass through Dynamo is ~ **\$540 Million**.

### Market Size of Dynamo Users

According to research, there are 2.9 Billion video game players helping the global games market to generate \$175.8 Billion in 2021<sup>3</sup>. In 2018, around 40 percent of U.S. gamers admitted to making in-game purchases in order to gain an advantage within the game<sup>4</sup>. Since our product is only valuable for players who have already made in-app purchases while also having access to cryptocurrency. As of 2021, it's estimated that global crypto ownership rates are at an average of 3.9%, with over 300 million crypto users worldwide. Therefore, the number of target customers is calculated by multiplying 2.9 Billion by 40% and by 3.9%, which leads to approximately **45.24 million people**.

### NFT Market Performance

From the perspective of NFT, the market looks promising and the future looks bright for NFT development. The sales volume for NFTs is estimated as \$2.5 Billion in the first half year of 2021.

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<sup>1</sup> <https://www.statista.com/statistics/558952/in-game-consumer-spending-worldwide/>

<sup>2</sup> <https://triple-a.io/crypto-gaming-industry/>

<sup>3</sup> <https://www.wepec.com/news/video-game-statistics/>

<sup>4</sup> <https://www.statista.com/topics/3070/us-gamers/>

In 2020, the sales volume was \$13.7 Million, and the weekly purchase volume is between \$10,000 and \$20,000.

## Part IV: Product Idea

### Why is blockchain necessary?

The implementation of blockchain technology in gaming marketplaces opens up a range of possibilities. Dynamo creates a decentralized marketplace that enables truly peer-to-peer transactions without centralized authorities taking their fees. This is made possible through blockchain technology and smart contracts to validate data authenticity, establish trust and ensure that transactions take place. Gamers no longer need the trusted third party verifying sellers and ensuring payments.

With its principle of economic decentralization, blockchain gives all game developers equal opportunities. Blockchain can solve the current issue of oligopolistic power exercised by large gaming studios and provide opportunities for small developers who lack the capability to build their own marketplace.

Furthermore, blockchain could help streamline the entire process by cutting out any and all middlemen and lengthy procedures, thereby the burden of unnecessary time delays. By using blockchain's secure and sophisticated distributed ledger, once a transaction gets recorded, the payment is almost instantaneously transferred to the receiving party. Since the transaction can't be reversed or changed, it also ensures better accountability and security than the trades conducted within the gaming platform through third-party payment service providers.

According to Deloitte, for transactions made using blockchain, the involved parties incur around 40% to 80% fewer remittance fees than traditional methods. Not only that, entire transactions are processed and completed in 4 to 6 seconds instead of having to wait for days. And when you include the benefits of added security and transparency into the mix, blockchain is surely a better solution for global monetary transactions. If we are not proposing the use of blockchain, the gamers would have a significantly longer lead time before receiving the items, and thus would possibly lose interest and decide not to buy.

### Features of our product

1. Store: Each gaming platform will have their own storefront in our marketplace



2. Search: Token/Item name search
3. Filters: Apply filters such as “Platform Name” and “item type” to select your preferred item with minimal effort
4. Sell and Buy feature\*
5. User Account Log: Users can check their NFT transaction history, NFT ownerships, linked gaming platform account, linked Metamask account

\*For the purpose of a Minimal Single-purpose Demo (MSD), we decided to only implement the sell and buy functionality in the smart contract code.

## User Journey

The following User Journey is based on the case when a seller and a buyer want to trade a virtual gaming item in Dynamo Marketplace. You can find the mock user interface of the user journey and a flow chart in the Appendix section.

### Buyer User Journey

1. Buyer links Steam account to Dynamo account to trigger the API.
2. Visit the Dynamo Marketplace and select a gaming platform that the buyer is interested in. For this example, that would be Steam Shop on Dynamo Marketplace. (Think of a Nike shop on Amazon).
3. Selects an item represented as an NFT asset from Dynamo Market and clicks “Buy”
4. Metamask opens asking the buyer to confirm the transaction
5. Receive the NFT asset
6. Buyer can choose to:
  - 1) Keep the NFT in their Dynamo NFT Wallet (the NFT is displayed in the wallet)
  - 2) Put the NFT in the marketplace and re-sell it (go back to step 1)
  - 3) Redeem the NFT to the in-game item
7. If the buyer choose to redeem the NFT, Dynamo will inform Steam about the item swap through an API.
8. Steam swaps the virtual items from the seller account to the buyer account in the gaming platform
9. Once the item is transferred to the Steam account, Dynamo will burn the NFT on blockchain

## **Seller User Journey**

Seller put items for sale:

1. Visit the Dynamo Marketplace, link to the gaming platform account (e.g. Steam)
2. Seller can view all the purchased/owned in-game items in the Steam account
3. Select the item that the seller wants to trade (Dynamo will mint the item into NFT at the backend)
4. Set the item's price and press the 'Sell' button

When the buyer appears:

5. Buyer triggers the transaction (e.g. buyer clicks "Buy")
6. Check whether the buyer pays enough for item transfer (if no, the seller can decline without penalty);
7. Confirm the transaction and send the items
8. Seller need to provide Dynamo with his/her Metamask Address in order to receive funds
9. Dynamo informs Steam to lock the item that has been transacted through API, and Steam will later remove the item from seller's Steam account
10. Get funds to seller's Metamask account

## **Minimum Viable Product**

The MVP of our project is a clickable mock website that solves core use cases, meaning that gamers can use the mock website to conduct transactions with basic functionalities. The website will list all gaming platforms that we cooperate with on the top. Users can simply click on any gaming platforms/games to enter the marketplace. The marketplace contains a search box located at the top of the webpage, and it allows users to search for specific items that they want to buy or sell. Buyers and sellers can link their gaming account (such as their Steam account) to their Dynamo Account, and Dynamo will verify the login authentication with the related platform. Think of this like someone linking their Apple/Gmail account to a website. Once logged in, the seller will see a list of all the items he has in the gaming platform in our marketplace (this will be done through an API from Dynamo to the gaming platform). The seller can select the item he wants to trade and click the 'Mint to NFT' button located on the bottom of the webpage. After

doing so, there will be a Dynamo engineer who receives the request and manually mints the NFT and list it for sale.

From a buyers perspective, the left-hand side of the marketplace is a filter box where they can filter and find the items with shared attributes that they are interested in. Once the buyer clicks the 'BUY' button, a backend engineer from the Dynamo team will receive the request and manually run the smart contract to initiate the purchase. Once the transaction has been successfully put on the chain, our backend engineer will contact the designated gaming platform, inform them that the transaction has taken place, and swap the item from the seller to the buyer. The MVP provides an ideal solution for instant gaming item transactions with cryptocurrency by allowing users to experience and interact with the core functionalities.

In the future, we want to remove the backend engineer and have the process be fully automated.

During the MVP experiment, we will monitor and track user data to help measure the success of our product idea. Metrics to be included:

- Demographics of the gamers (Age, Gender, Location)
- # of successful tradings
- Avg number of trades per user
- Average transaction amount
- The average time going through the transaction
- Percentage of failed transactions and the failed reasons
- User feedbacks on UI

## Minimal Single-purpose Demo

The MSD we created is a product that enables the sell and purchase feature of gaming item NFT using smart contracts. It illustrates two fundamental functionalities that Dynamo provides: 1) Mint the NFT and put the NFT for sale, 2) Purchase of the NFT.

### **Part I: Dynamo NFT.sol**

Dynamo will mint the in-game items into NFT, and list the NFT in the marketplace for sale.

- Generate new ID when mint NFT
- Set token URI (a unique identifier of the in-game item NFT)

- NFT (contains information such as id, price, whether is available for sale)
- Get the price
- Custodian: We only want to transfer the NFT from one gamer to another when the gamer actually purchases the NFT. To conduct in a secure way, we want to approve a custodian, a person in charge of transfer ownership on sale, to transact on behalf of the buyer and seller.
- List Token for sale

This part of code has three written functions and five functions coming from built-up ERC721, which is a standard for representing ownership of non-fungible tokens. Following the flow chart or the customer journey, Dynamo will first mint the gaming items into NFT and list it on sale using the 'mintNft' function. The rest of the code includes the major functionalities such as getting the price of a particular NFT, transferring the NFT, re-writing the sales status of the NFT, and checking ownership of the NFT etc.

## **Part II: Dynamo Transaction.sol**

Transfer the NFT, in which the buyer gets the NFT and the seller receives the money (this function is called by the custodian).

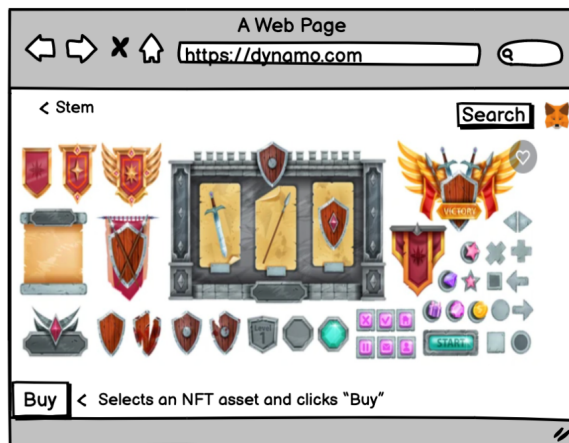
- Requirements: money sent  $\geq$  sales price
- Send funds through Metamask
- Transfer NFT from seller to buyer
- Mark NFT as sold and burn it

The reason for having the second part of code is to automate the whole trading process in one click. The special part of the "buyNft" function is that it will extract the price of the NFT and ensure the amount paid is greater than the price of the NFT, otherwise the code will pause and return an error message. Once the amount paid has been verified, the code will transfer the NFT from seller to buyer and mark the NFT 'sold' on the Dynamo marketplace instantly.

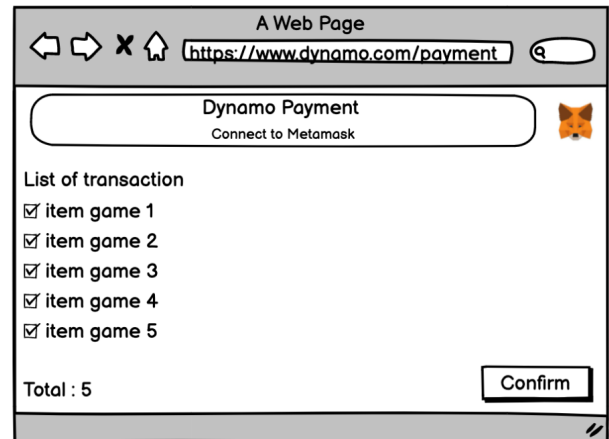
## **Part V: Appendix**

### **Appendix I: User Interface**

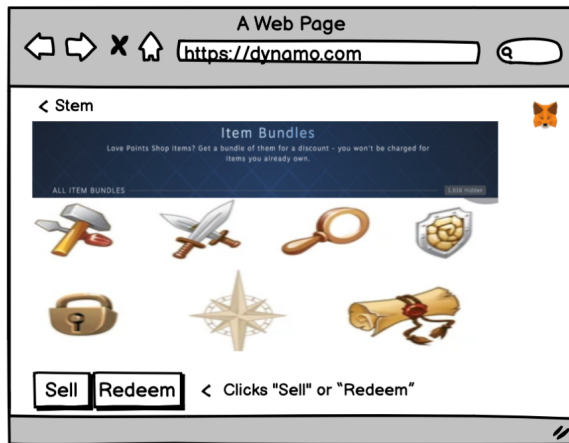
## Buyer Mock User Interface



1. Visit the Dynamo Marketplace and select a gaming platform that the buyer is interested in. For example, that would be Steam Shop on Dynamo Marketplace. Select an NFT asset from the Dynamo Market and clicks "Buy"

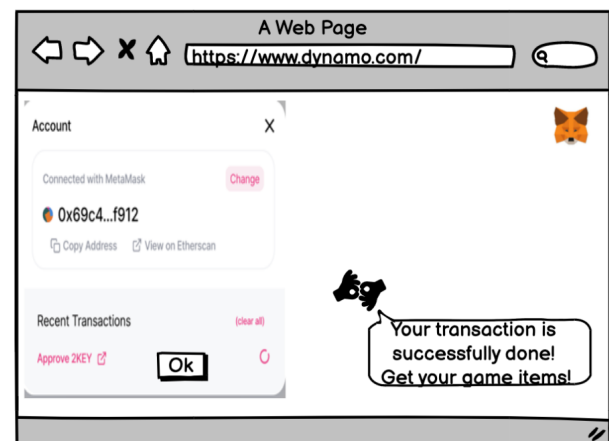


2. You can see the list of items you want on the Dynamo platform and just click Confirm button to settle your transaction! Dynamo platform link to Metamask!



4. After receive the NFT asset, you can choose to:

- ☒ Keep the NFT in your Dynamo NFT Wallet.
- ☒ Put the NFT in the marketplace and Re-sell it
- ☒ Redeem the NFT to the in-game item



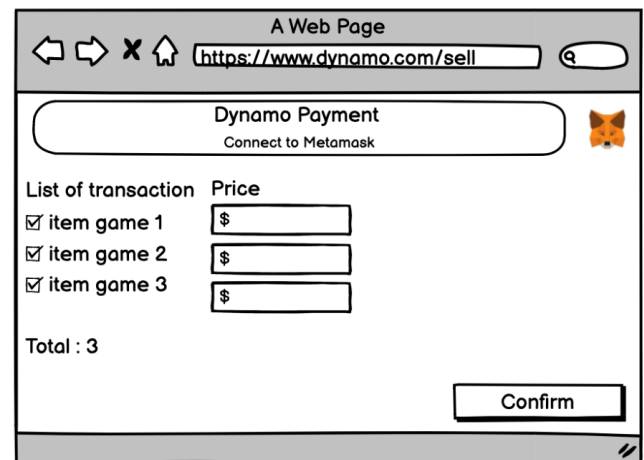
3. Dynamo will process your transaction. Just wait for the seller to confirm the transaction and send the items. Click ok to go back to your gaming platform!

## Seller Mock User Interface

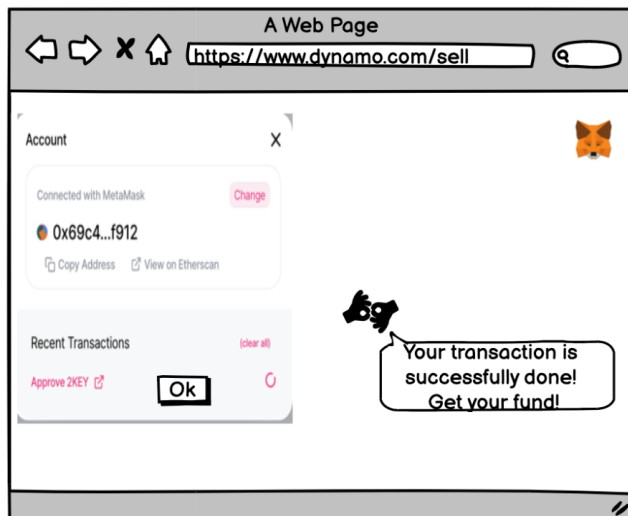


### 1. Seller put items for sale:

- ✓ Visit the Dynamo Marketplace, link to the gaming platform account (e.g. Steam)
- ✓ Seller can view all the purchased/owned in-game items in the Steam account
- ✓ Select the item that the seller wants to trade  
(Dynamo will mint the item into NFT at the backend)

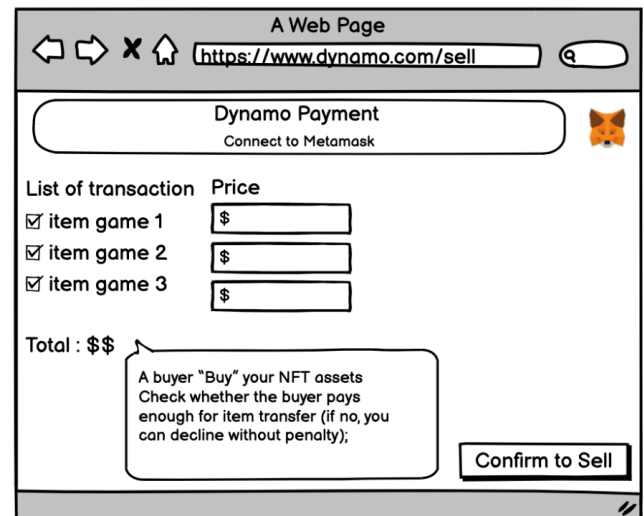


### 2. Set the item's price and press the 'Sell' button



### 4. Dynamo will process your transaction.

- ✓ Provide your Metamask Address in order to receive funds
- ✓ Dynamo informs Steam to lock the item that has been transacted through API, and Steam will later remove the item from the seller's Steam account
- ✓ Get funds to seller's Metamask account



### 3. Buyer triggers the transaction (e.g. buyer clicks "Buy")

Check whether the buyer pays enough for item transfer (if no, the seller can decline without penalty); Confirm the transaction and send the items

## Appendix II: Flow Chart

Flow diagram explaining how the smart contract works

