

Rare Resources

Trading System

Here is where your
presentation begins



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01 PROBLEM STATEMENT

Our problem statement

02 CURRENT ISSUE

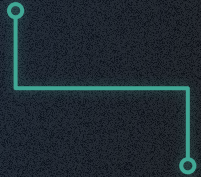
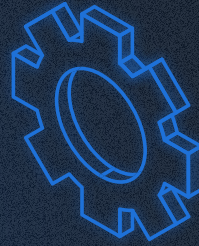
How blockchain can tackle the current issue

03 TECH STACK

The technology used in our project

Problem Statement 2

Our project mainly focus on solving a environmental and business related issue - the emission trading and other sparse resources trading



Problem Statement

To tackle global warming, governments have established an emission trading system. Each company is assigned a fixed CO2 quota that they can release. Companies can trade their emission quota in the market place to fully utilize the quota. Still, the cost of trading is high, which stops small companies to participate in the market and it can bring up the price of the final product. Our goal is to bring this trading process to blockchain, where companies can trade the emission quota freely and efficiently. In our project, we created HackTokens based on ERC721 and a TokenMarket. HackToken can represent multiple rare resources like rare earth in the same market, so companies can have more freedom to trade sparse resources. In our TokenMarket they can use tokens to trade tokens, so they will not have to sell their extra resources first.



Problem Addresses - size of potential audience

Rare Resources

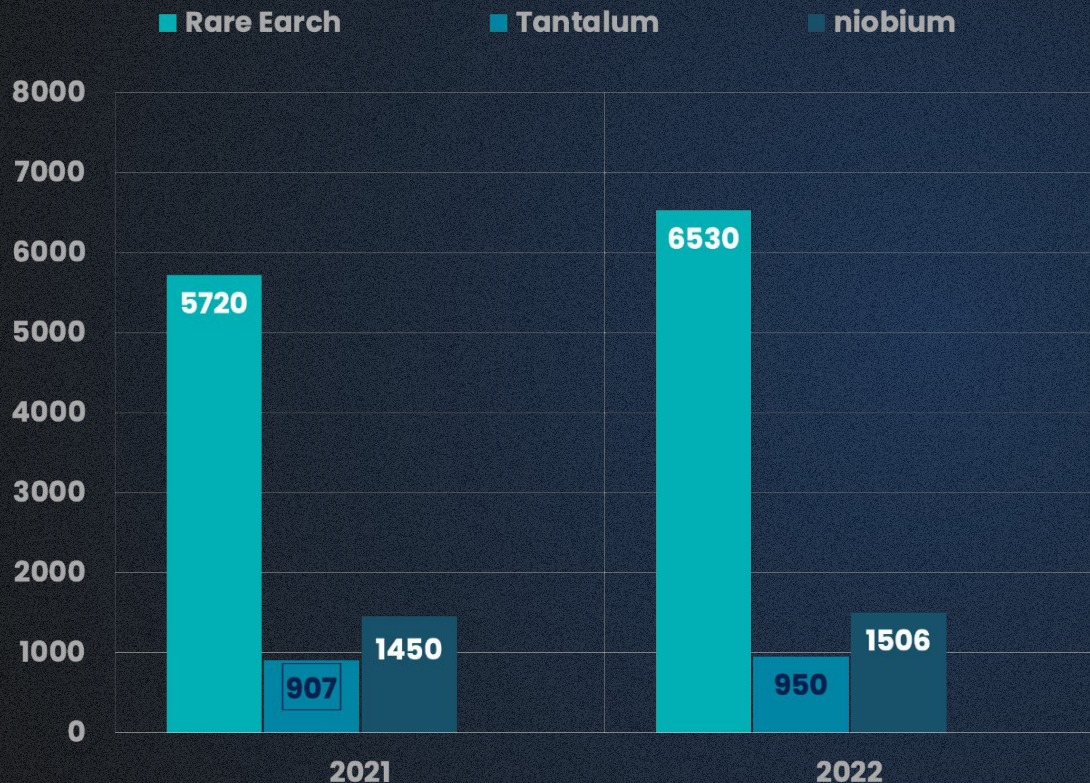


Rare Earth Trading Market
(US\$ 5720 million)



Carbon Emission Trading
Market (US\$203.22 million)

Growing Total Market(Million US\$)



01

The global rare earth elements market size was valued at USD 2.80 billion in 2018 and is estimated to witness a CAGR of 10.4% from 2019 to 2025..

02

The global Tantalum Pentoxide Market Size was estimated at **USD 907 million in 2021** and is projected to reach USD 1138.97 million by 2028, exhibiting a CAGR of 3.31

03

Niobium market will grow at a rate of 6.00% for the forecast period of 2021 to 2028.

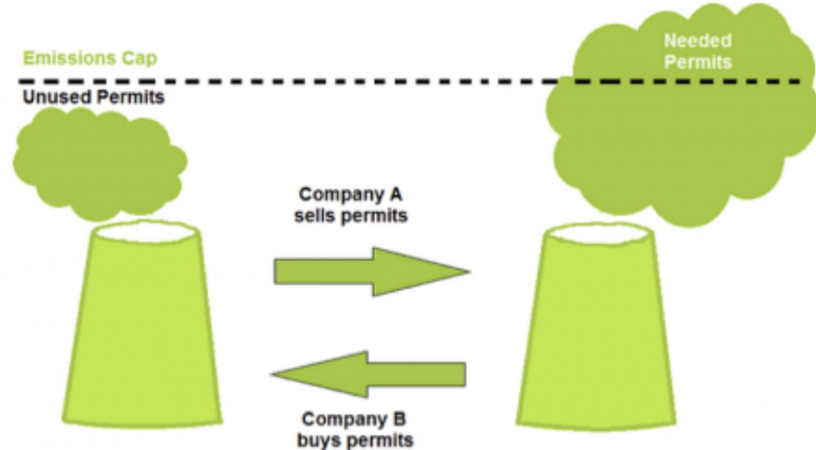
Government limit the mining

China tightens rare-earth regulations, policing entire supply chain

Stricter export controls give Beijing leverage amid US tensions



The EU Emissions Trading System: Trading of CO2 Emission Permits



Current Issues

01 Trade cost is high

The current market charge a high cost of transaction, while on blockchain, the only cost will be gas and nothing else

02 Hard to find buyer/seller

All resources are listed on a market, so people can easily locate a seller or buyer.

03 Trade is not transparent

Every trade will be broadcasted to the whole chain, no underground trade will take place.

04 Time Consuming

Unlike normal trades, emission trading needs more detailed information like location of the emission permission. In our projects, these information will be listed, which decrease the time to negotiate

Existing Implementation



- ❖ There is no current implementation of carbon trading system. Yet, there are some papers talking about this issue
- ❖ Carbon Credits on Blockchain (2020) – It mainly talks how tokens can be used in a global level
- ❖ Designing a Blockchain Model for the Paris Agreement's Carbon Market Mechanism (2020) – build on Ethereum platform and make carbon trading

Key Difference

01

Complicated

The system is too complicated, which increase the barrier for companies to adapt this solution, and our solution can be implement in all levels

02

Inclusivity

The current solution only focus on carbon credits, where our solution can handle different resources



Solidity Implementation

Truffle, TruffleAssert,
Ganache, Openzeppelin



Solidity Tech Stack

Solidity



Truffle

We develop our solidity code in the truffle environment

Openzeppelin

ERC721: Non-frangible: make sure every token is unique, and government can check the authenticity of the token

TruffleAssert

Unit testing - we use TruffleAssert to test if functions are working properly in our smart contract

Ganache

We use Ganache chain to run our smart contract, and simulate its behaviour on actual chain

SOLIDITY STRUCTURE



HackToken

- Mint token (admin only) - give quota, information, and serial number to the token
- Transferfrom - allows people to transfer token to other address
- Get Information: name, quota, detailed information etc

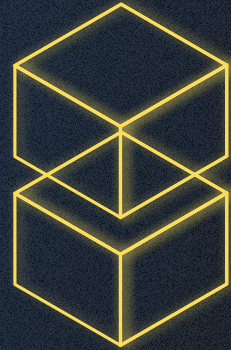
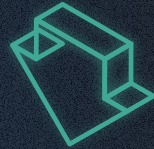
TokenMarket

- ListToken - set a price for the token for listing
- UnListToken - the token is still in the market, but others cannot buy
- TransferBack - get the token back from the market and transfer to the owner's address
- BuyToken - buy a listed token
- Get Information: name, quota, detailed information etc
- GetAllListedToken - get all the listed tokens on the market



Scalability

- This implementation of smart contract allows the project to be easily scale. In the future, more markets can add to the ecosystem without changing the existing contract.
- Some possible future market: option market, bidding market, etc
- The HackToken also can handle different resources based on the information input.





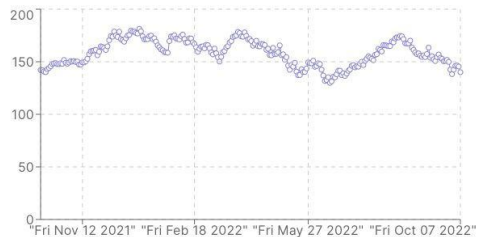
UI/UX

Frontend
Implementation



TokenMarket

Trading testToken1



Loading... 0 WEI

0

BUY 0 TOKEN FOR 0.0 ETH

- This page will show the details of the token
- It will also display the previous transaction of the token

Previous Transactions

TOKEN NAME	TOKEN PRICE (WEI)	DATE
Mark	2	2021-01-01
Wen Jun	1	2021-01-01
Mark	2	2021-01-01
Wen Jun	1	2021-01-01
Mark	2	2021-01-01
Wen Jun	1	2021-01-01

TokenMarket

Token Name

Q

Search Criteria

Sort by Date

Search the Token you have

Listed Tokens

mark

WEI: 2

Serial #: markCoin , Minted at 09/10/2022

UNLIST

TRANSFER
BACK

CHANGE
PRICE

SELECT AN ACTION

mark

WEI: 3

Serial #: markCoin , Minted at 09/10/2022

UNLIST

TRANSFER
BACK

CHANGE
PRICE

SELECT AN ACTION

Owned Tokens

mark

Serial #: markCoin
Minted at 09/10/2022

POST TO MARKET

SELECT AN ACTION

mark

Serial #: markCoin
Minted at 09/10/2022

POST TO MARKET

SELECT AN ACTION

- You can search for the token that you wish to buy
- Listed Tokens are displayed in the marketplace
- The owned tokens are displayed in a similar manner

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in Every Wallet™**

THANKS

