

I. Introduction

EtherID is a decentralized application (dApp) that provides DNS-like services for Ethereum wallets. It allows users to register human-readable domain names that map to Ethereum addresses, making it easier to send and receive cryptocurrency without dealing with long, complex addresses.

II. Related Works

EtherID is similar to Ethereum Name Service (ENS), providing readable domain names for Ethereum addresses. Both systems map complex blockchain addresses to memorable names, but EtherID offers a simpler, more focused implementation with direct payment capabilities using web3.0 approach.

III. Core Features

1. Domain Registration & Management System

- By borrowing the concept of Domain Name System into blockchain applications, users can register domain names as they desire.
- Once the domain is mapped to a wallet address, the domain will be locked to the corresponding wallet address until the domain is available again.
- Easy administration can be done on the Admin Panel.
- The register domain can be used to provide a shortcut for payment transfer.

2. Registration Fee Collection

- As each domain require certain amount of registration fees to register, all accumulated registration fees can be collected by the contract owner.

3. Intuitive User Interface

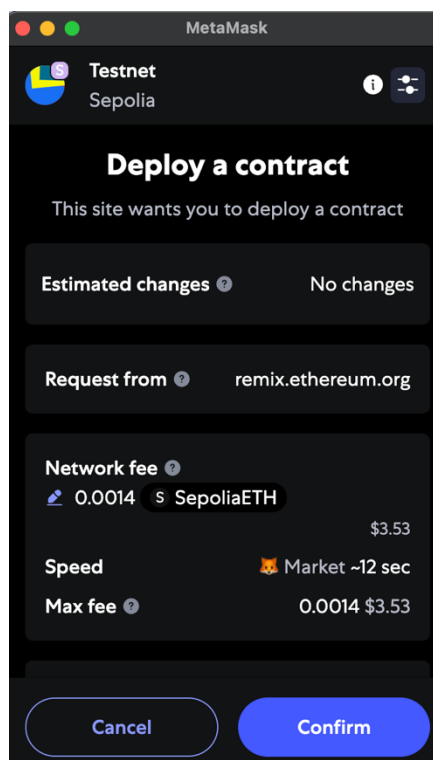
- Simple and introduction UI leading user to use the dApp.
- Users can connect MetaMask wallet to use the dApp.
- The dApp is dynamically updating, i.e. real time registration fee, sensitive to wallet changing and contract owner only Admin Panel.

4. Level of Protection

- The functions defined in the smart contract is prohibited to different level of permissions to increase security level.
- Functions will be only called by the contract owner (a.k.a admin)
- Protection in terms of accessibility is also introduced, before entering functions body, several check will be performed to avoid redundant contract calling.

IV. Testing

Test #1 – Deploy contract on Sepolia testnet with Remix.



1. Contract Owner: 0xb56d84038e4ad05081a08874c950599d51e553f2
2. Contract Address: 0xB1bCadA08aD3C30de7c89201Ac82fA786175d265
<https://sepolia.etherscan.io/address/0xB1bCadA08aD3C30de7c89201Ac82fA786175d265>
3. The contract owner will be denoted by **OWNER** for later.

Test #2 – Before and after wallet connection.

(before)

The screenshot shows the EtherID web interface. At the top left is the 'EtherID' logo. At the top right is a blue button labeled 'Connect Wallet'. The interface is divided into two main sections. The left section contains a form for registering a domain: 'Choose domain name' with a text input 'mydomain' and a '.eid' suffix; 'Link wallet address' with a text input '0x' and a 'wallet' suffix; and 'Registration Fee' with a lightning bolt icon and '0.001 ether'. A blue 'Register Domain' button is at the bottom of this section. The right section contains a form for transferring ether: 'To' with a text input 'wallet address or EtherID domain' and a '.eid' suffix; 'Transfer amount' with a text input and an 'ether' suffix; and a blue 'Transfer' button at the bottom.

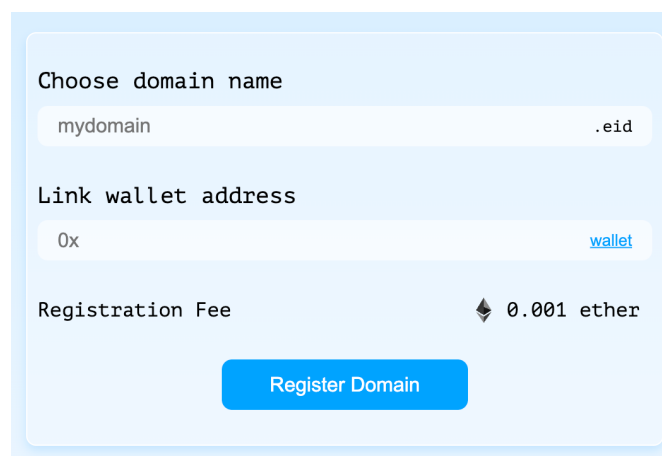
(after)

The screenshot shows the same EtherID web interface, but with changes indicating a wallet is now connected. The 'Connect Wallet' button at the top right has been replaced by a blue button showing the wallet address '0xF9A2...13D7'. The rest of the interface, including the domain registration and transfer forms, remains the same as in the 'before' state.

1. Using another account (**TEST**) for testing purpose.
2. **TEST** Address : 0xF9A2b75bA09FdD8d39F2f1f392a96297588013D7
3. **TEST** implies normal users as they are not the contract owner.
4. Note that the “Connect Wallet” button already represented by the user wallet address.
5. Note that the registration fee is dynamically get from the smart contract, i.e. 0.001 ether registration fee.

Test #3 – Register a domain for TEST.

A. The copy wallet button helps users to load their connected wallet address.
(before)




Choose domain name

mydomain .eid

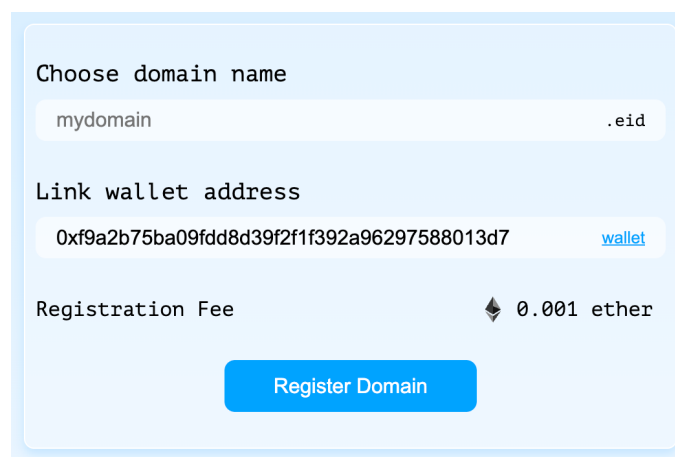
Link wallet address

0x [wallet](#)

Registration Fee  0.001 ether

[Register Domain](#)

(after)




Choose domain name

mydomain .eid

Link wallet address

0xf9a2b75ba09fdd8d39f2f1f392a96297588013d7 [wallet](#)

Registration Fee  0.001 ether

[Register Domain](#)

B. Domain name will be constrained to lowercase letters only.
(included numbers)

EtherID

Domain name must contain only lowercase letters.

確定

0xF9A2...13D7

Choose domain name

12345678.eid

Link wallet address

0xf9a2b75ba09fdd8d39f2f1f392a96297588013d7wallet

Registration Fee

0.001 ether

Register Domain

To

wallet address or EtherID domain.eid

Transfer amount

ether

Transfer

(less than 5 letters)

EtherID

Domain name must be at least 5 letters long

確定

0xF9A2...13D7

Choose domain name

abc.eid

Link wallet address

0xf9a2b75ba09fdd8d39f2f1f392a96297588013d7wallet

Registration Fee

0.001 ether

Register Domain

To

wallet address or EtherID domain.eid

Transfer amount

ether

Transfer

(included invalid characters)

EtherID

Domain name must contain only lowercase letters.

確定

0xF9A2...13D7

Choose domain name

abc_def.eid

Link wallet address

0xf9a2b75ba09fdd8d39f2f1f392a96297588013d7wallet

Registration Fee

0.001 ether

Register Domain

To

wallet address or EtherID domain.eid

Transfer amount

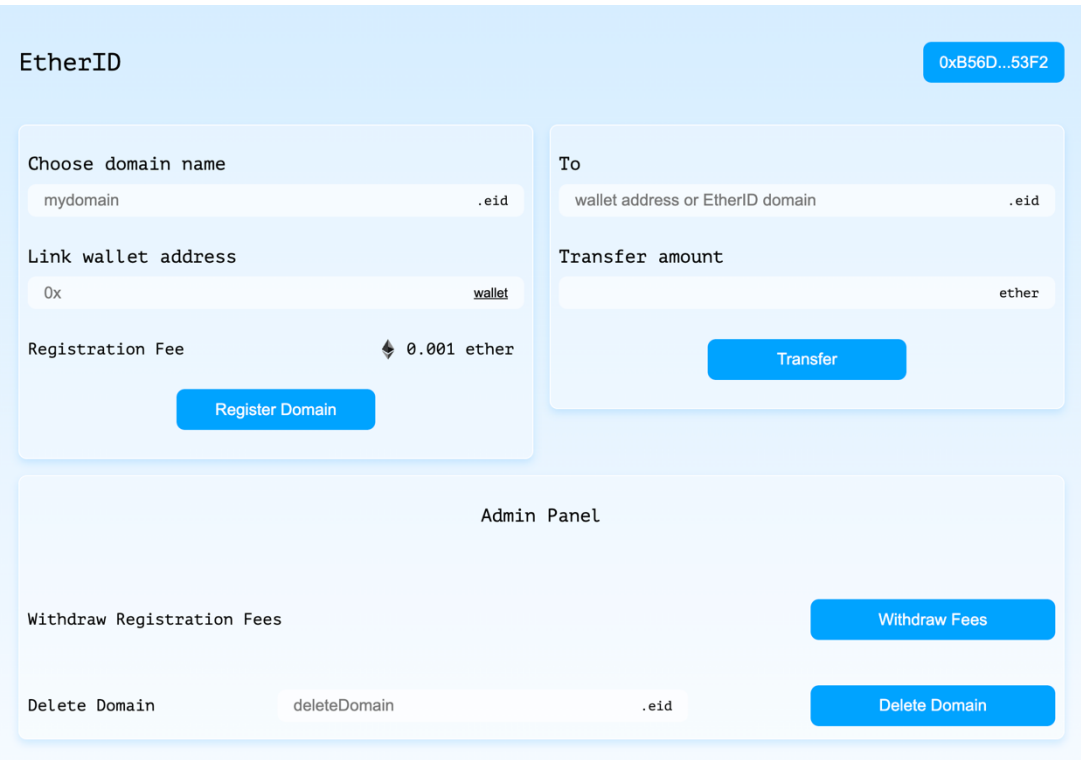
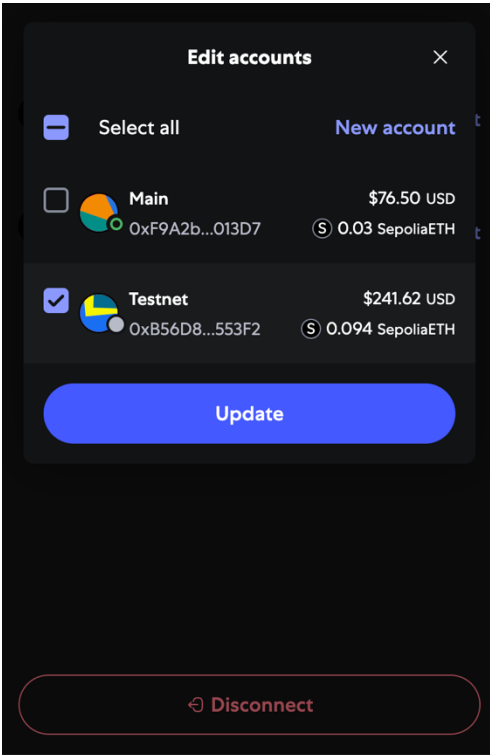
ether

Transfer

(acceptable domain name)

1. The registration transaction:
 0x782b00b8fbb16bcaa3e8076afb423a2a10b5808ef0972dc7a98937f1ac38d47c
<https://sepolia.etherscan.io/tx/0x782b00b8fbb16bcaa3e8076afb423a2a10b5808ef0972dc7a98937f1ac38d47c>
2. Exactly the required registration fee is paid to the smart contract.

Test #4 – Update the front-end when wallet address is changed.



Contract 0xB1bCadA08aD3C30de7c89201Ac82fA786175d265

Overview
ETH BALANCE
0.002 ETH

More Info
CREATOR
0xB56D8403...D51E553F2 | 36 mins ago

Multichain Info
N/A

Transactions Token Transfers (ERC-20) Contract Events

Latest 2 from a total of 2 transactions

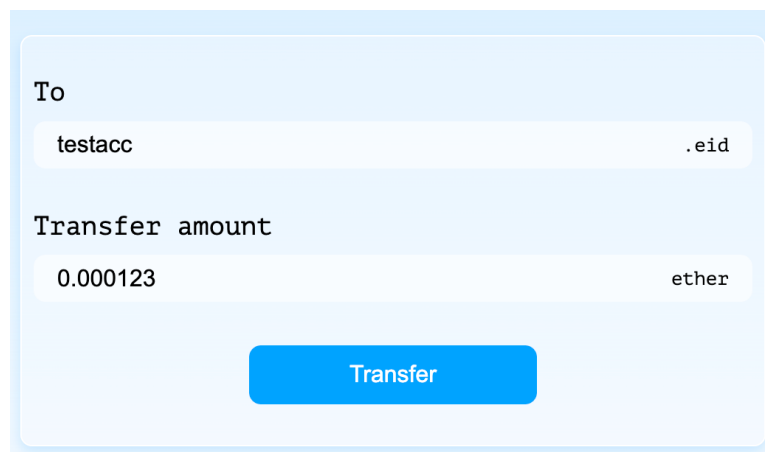
Transaction Hash	Method	Block	Age	From	To
0xbdd361d024...	Register Dom...	8375545	1 min ago	0xB56D8403...D51E553F2	0xB1bCadA08aD3C30de7c89201Ac82fA786175d265
0x782b00b8fbb...	Register Dom...	8375473	16 mins ago	0xF9A2b75b...7588013D7	0xB1bCadA08aD3C30de7c89201Ac82fA786175d265

[Download: CSV Export]

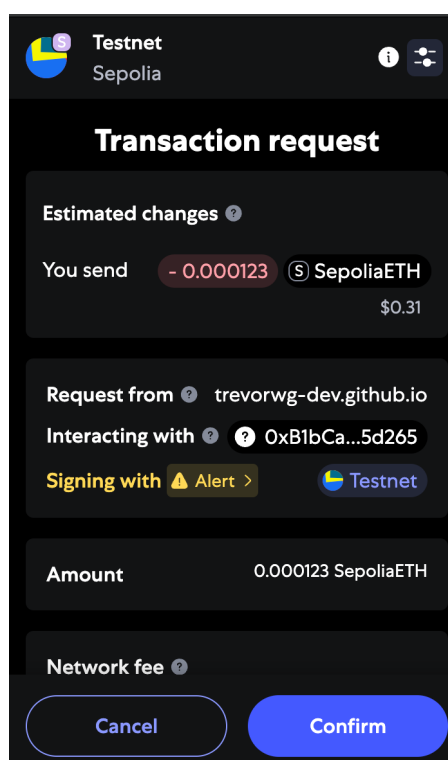
A contract address hosts a smart contract, which is a set of code stored on the blockchain that runs when predetermined conditions are met. Learn more about addresses in our Knowledge Base.

1. When the wallet changed (from **TEST** to **OWNER**) both the right-corner button changed to represent the **OWNER** address.
2. Since this address is the contract owner, the admin panel is rendered.
3. Register domain for **OWNER** for later testing, such that **TEST** is using “testacc.eid” as domain name, while **OWNER** is using “admin.eid”.
4. The OWNER domain name is register to the contract:
0xbdd361d0245a3115305b46901b5d927b8c9b24586d6a1f765f5afdda6f6580c4
<https://sepolia.etherscan.io/tx/0xbdd361d0245a3115305b46901b5d927b8c9b24586d6a1f765f5afdda6f6580c4>
5. The contract balance is 0.002 ETH as expected.

Test #5 – Transfer 0.000123 ETH from **OWNER** to **TEST** though domain

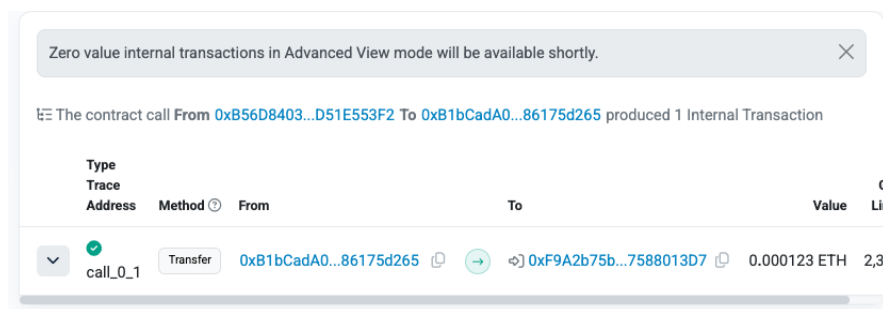
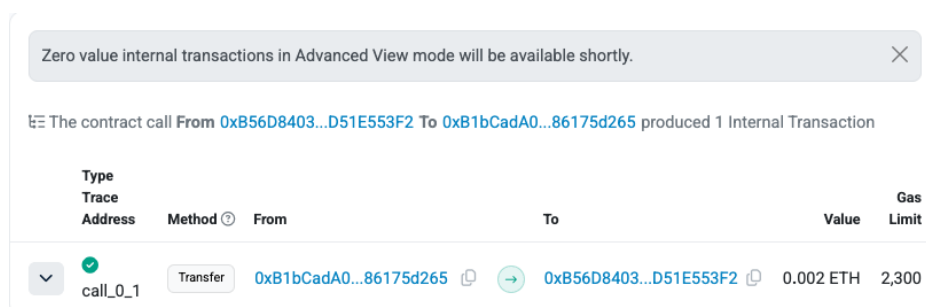
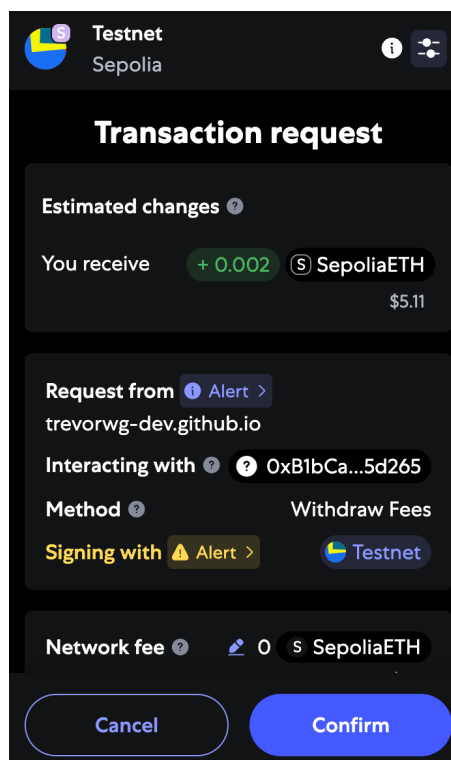


A web interface for transferring ETH. It has a light blue background. At the top, there's a 'To' label above a text input field containing 'testacc' and a '.eid' suffix. Below that is a 'Transfer amount' label above a text input field containing '0.000123' and an 'ether' suffix. At the bottom, there is a blue button labeled 'Transfer'.



A mobile app screen titled 'Transaction request' for the 'Testnet Sepolia' network. It shows 'Estimated changes' with 'You send' of '- 0.000123 SepoliaETH' valued at '\$0.31'. It also shows 'Request from' as 'trevorwg-dev.github.io', 'Interacting with' as '0xB1bCa...5d265', and 'Signing with' as 'Alert' with a 'Testnet' icon. The 'Amount' is '0.000123 SepoliaETH' and the 'Network fee' is shown. At the bottom are 'Cancel' and 'Confirm' buttons.

1. The **OWNER** to contract transaction:
<https://sepolia.etherscan.io/tx/0x6cbacfdd3ffb7ab81ce8a06f8037e58f77dea562979c8a42763e4ea24015c959>
2. The exact value of 0.000123 ETH will be sent to the contract, then the contract will further transfer to target user.

3. The contract to **TEST** *internal* transaction:Test #6 – **OWNER** Withdraw registration fees

1. As expected, we register 2 domain names, so the contract will have 0.002 ETH, and now we are collecting back using the UI in admin panel.
2. The transaction address:
<https://sepolia.etherscan.io/tx/0xd9d9bc40cc8ed87ed3b0beae7ce204eb9a9176e4c661f40d099e36673d52ccb9>

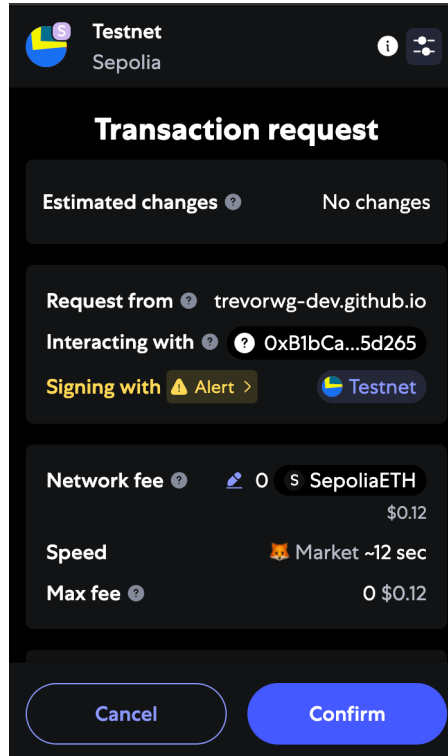
Test #7 – **OWNER** delete existing domain name

Delete Domain

testacc

.eid

Delete Domain



1. The mapping for “testacc.eid” to the **TEST** address will be replaced by 0s, thus the mapping is deleted.
2. The transaction address:
<https://sepolia.etherscan.io/tx/0x60f60aeddcc05120bcc4d8294a3d0acf6e42bc8964d4b3ddcb1edfb7ae15c6aed>

V. Beyond Development

1. Better UI / Notification system to notice user to wait for next action.
2. Introduce user-side domain management system, i.e. they can manage how long they want to “rent” the domain name and perhaps can renew or drop the domain name when they desire.
3. Although, this is a small project using dApp and blockchain concept, backend server to handle user responsive will be better, rather than let the smart contract or front-end logic handling.