

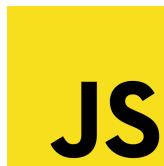
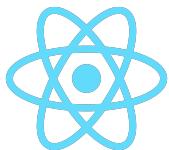
ROAD TO WEB3

Soumaya Erradi

Lead Software Developer & IT and Electronics Instructor

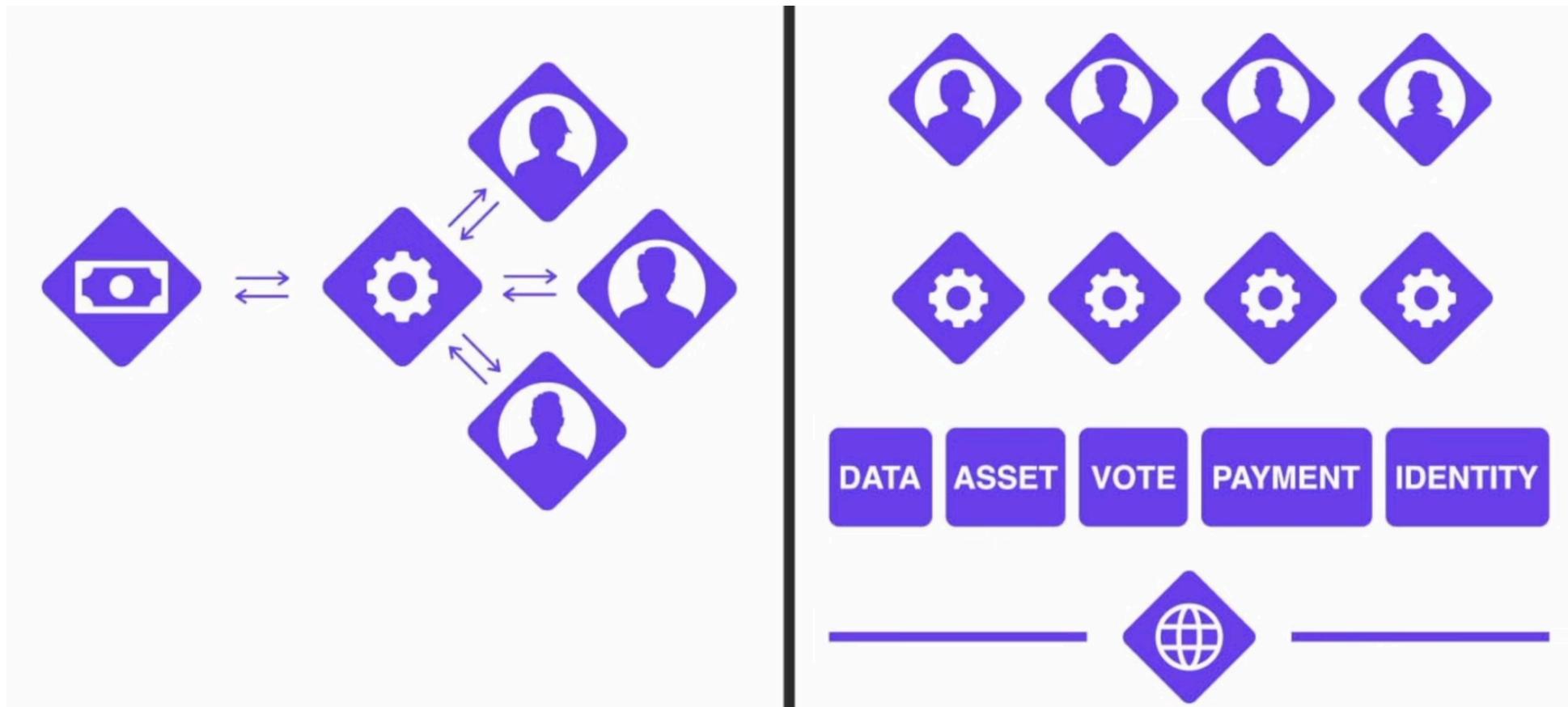
Soumaya Erradi

- Lead software developer @ Scaling parrots
- Frontend specialist
- Web3 enthusiast
- IT and electronics divulger

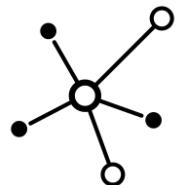


Web3

Web2 vs Web3



Pros



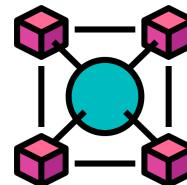
Decentralization



Ownership



Security



Interoperability



Permission less

Cons



Scalability



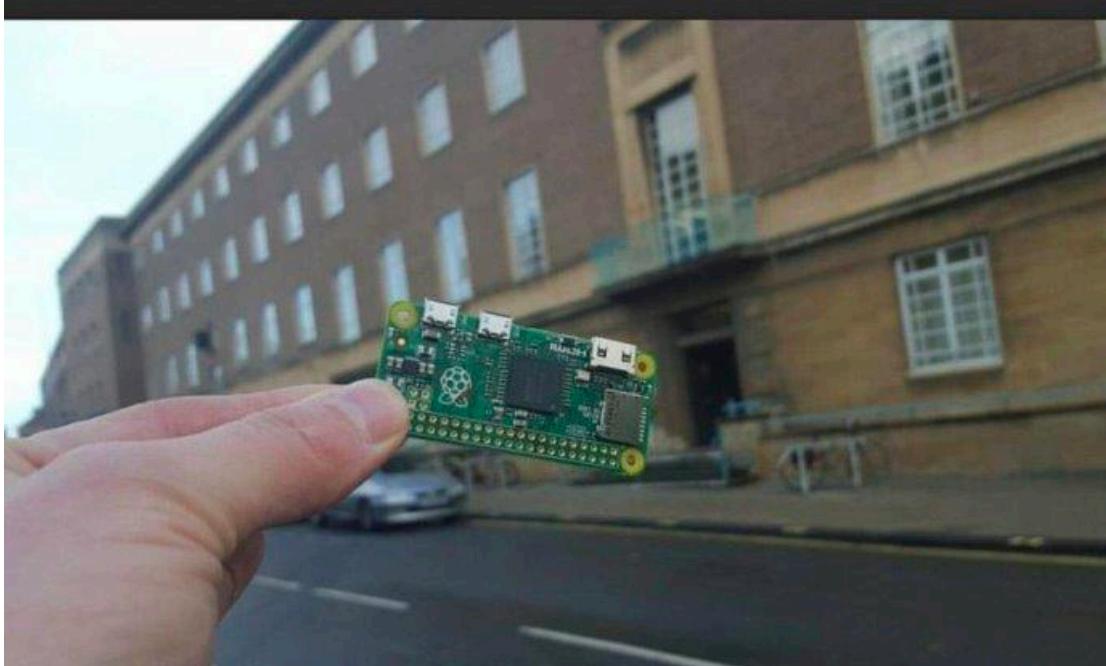
Complexity



User adoption

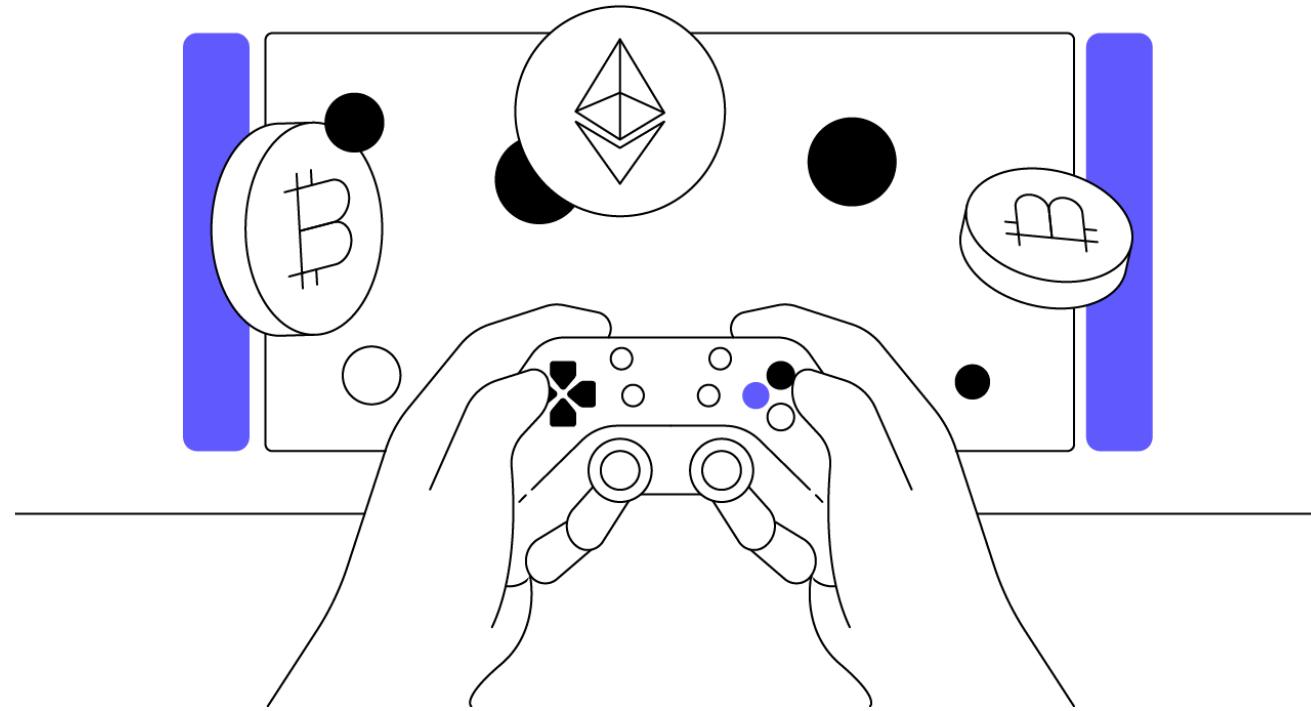


Environmental impact



Use cases





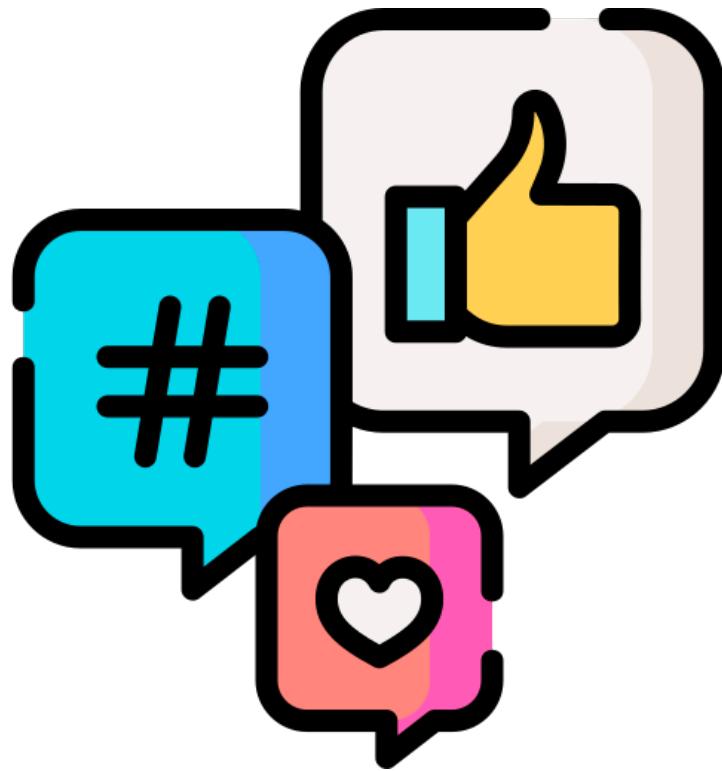
GAMEFI



NFT MARKETPLACE



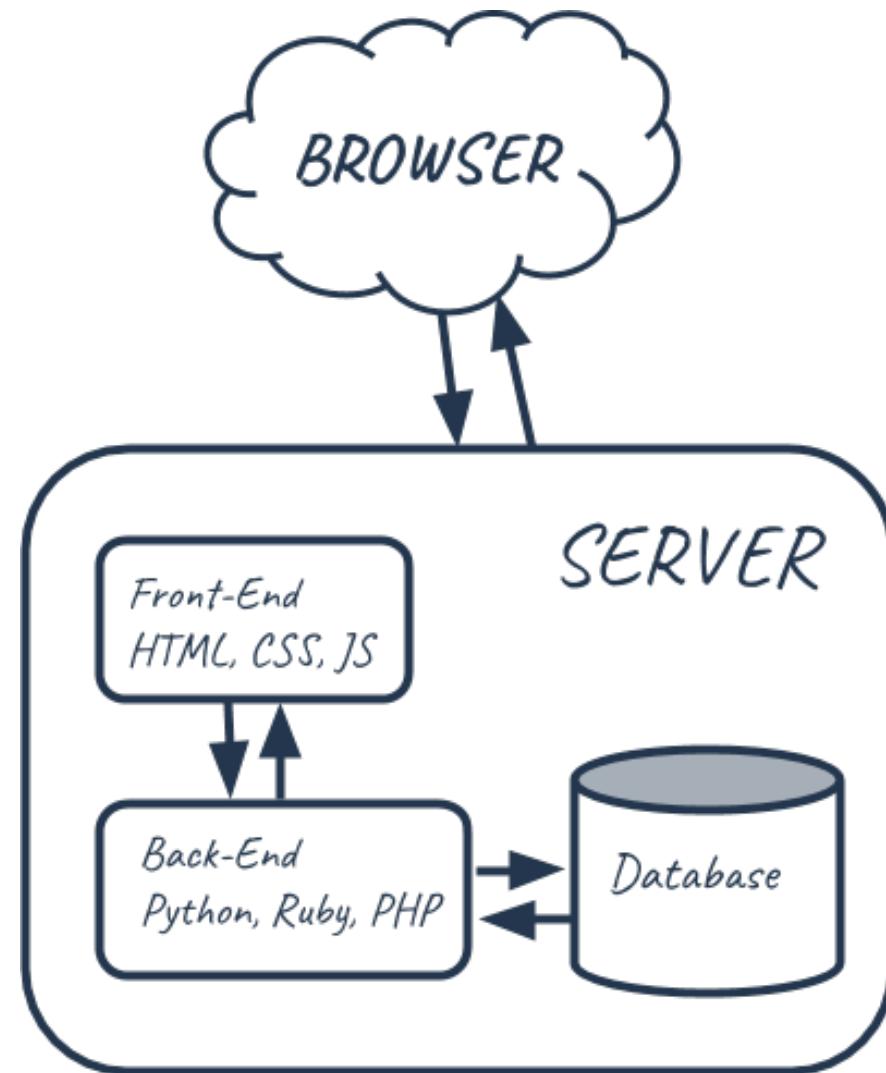
DEFI

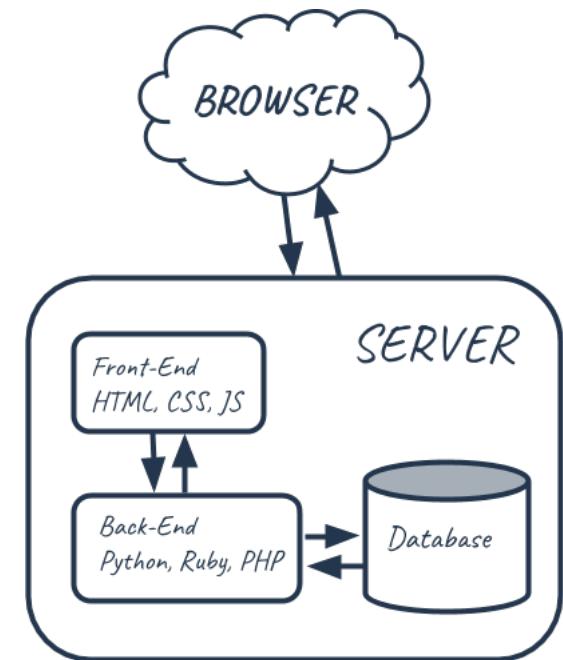
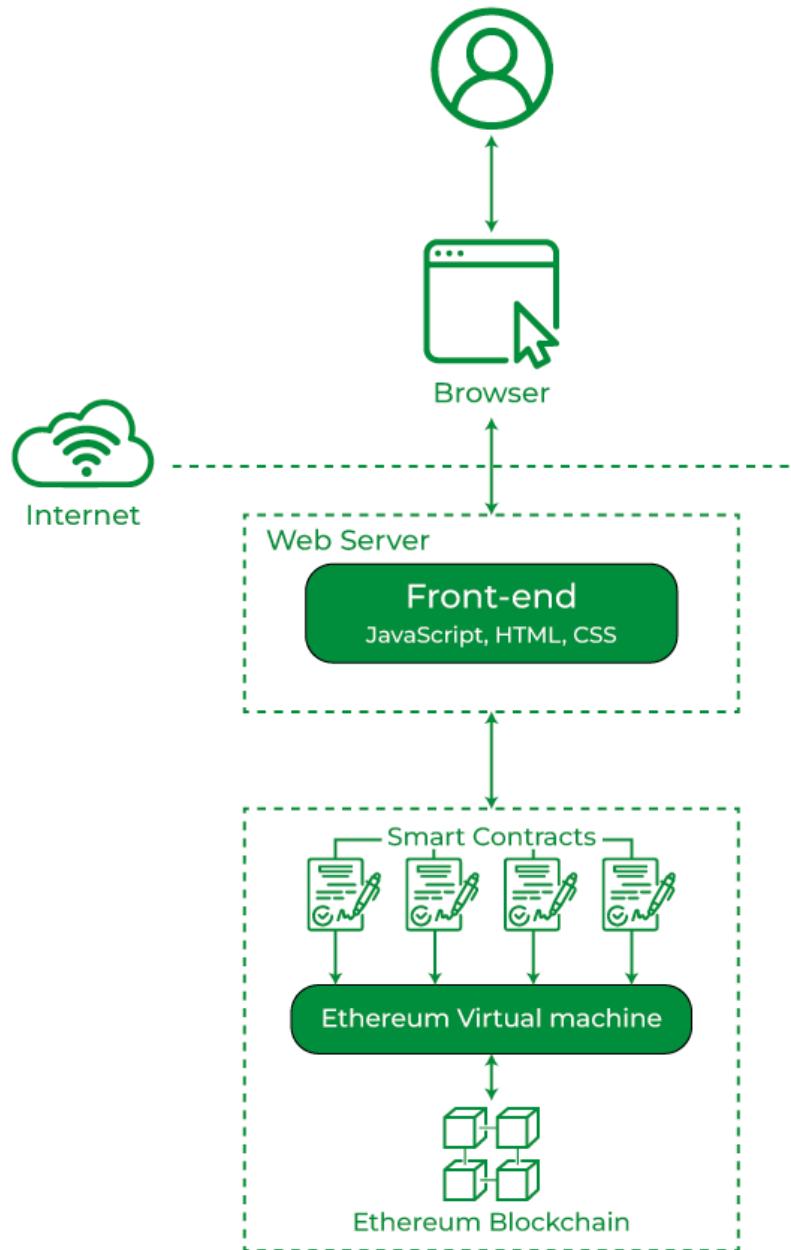


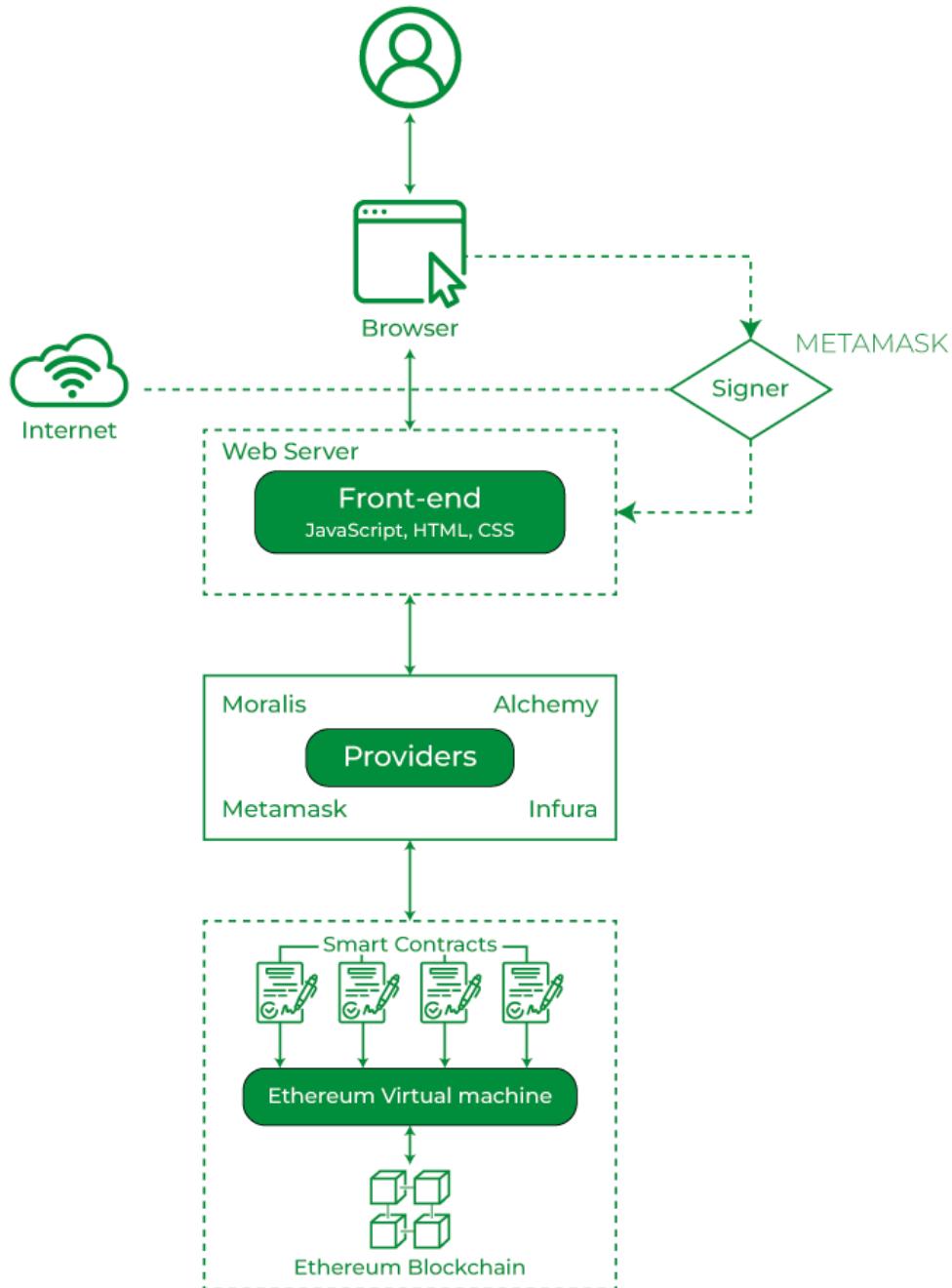
SOCIAL MEDIA

Web3 development

Web2







Web3 dev tools

Frontend framework/library

HTML



CSS



JS

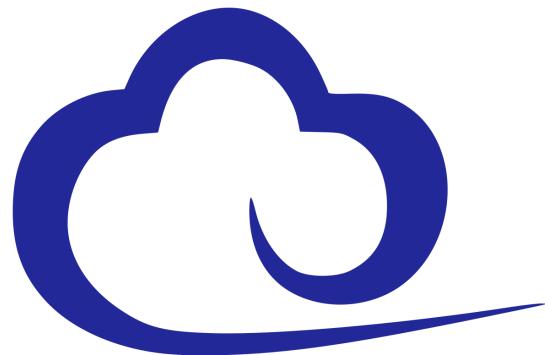


Wallet



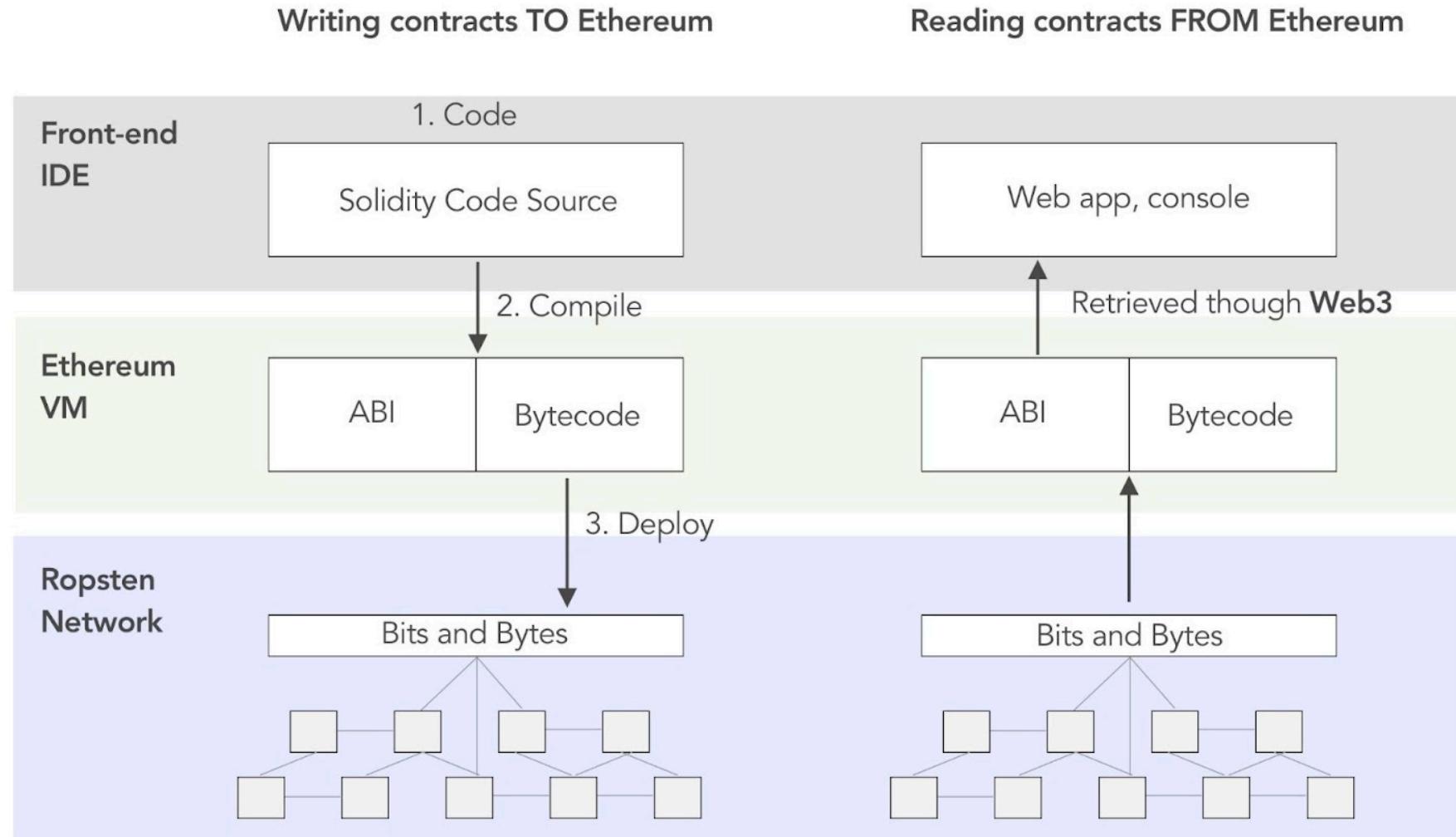
METAMASK

Library



ethers.js

Smart contract



```
1 pragma solidity >=0.5.0;
2
3 contract Rent {
4     // define events notifying rent is paid
5     event RentPaid(
6         address indexed _from,
7         string indexed _tenant,
8         uint _rent
9     );
10
11 function deposit(string memory _tenant) public payable {
12     //emit event notifying rent is paid
13     emit RentPaid(msg.sender, _tenant, msg.value);
14 }
15 }
```

```
"abi": [
{
    "constant": false,
    "inputs": [
        {
            "name": "_tenant",
            "type": "string"
        }
    ],
    "name": "deposit",
    "outputs": [],
    "payable": true,
    "stateMutability": "payable",
    "type": "function"
},
{
    "anonymous": false,
    "inputs": [
        {
            "indexed": true,
            "name": "_from",
            "type": "address"
        },
        {
            "indexed": true,
            "name": "_tenant",
            "type": "string"
        },
        {
            "indexed": false,
            "name": "_rent",
            "type": "uint256"
        }
    ],
    "name": "RentPaid",
    "type": "event"
}]
```



Rinkeby Testnet Network

All Filters

Search by Address / Txn Hash / Block / Token / Ens



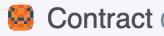
Home

Blockchain

Tokens

Misc

Rinkeby



Contract 0xBc84F3bf7Dd607a37F9e5848a6333e6c188d926c



2

Contract Overview

Balance: 0 Ether

More Info

More

My Name Tag: Not Available

Contract Creator: 0xc31eb6e317054a79bb... at txn [0x66c6c946e53be3f544...](#)

Token Tracker: FundRequest (FND)

Transactions

Internal Txns

Erc20 Token Txns

Contract

Events

Code

Read Contract

Write Contract

Read Contract Information

[Expand all] [Reset]

1. name



2. creationBlock



3. totalSupply



4. decimals



5. balanceOfAt



6. version



Ethers.js

```
npm install ethers
```

```
import { ethers } from "ethers";
```

Ethers.js

- **Provider** - This is a class in Ethers.js that provides abstract read-only access to the blockchain
- **Contract** - This class is responsible for the connection to specific contracts on the network

Operations in Web3

- Wallet interaction
- Read from smart contract
- Write in smart contract

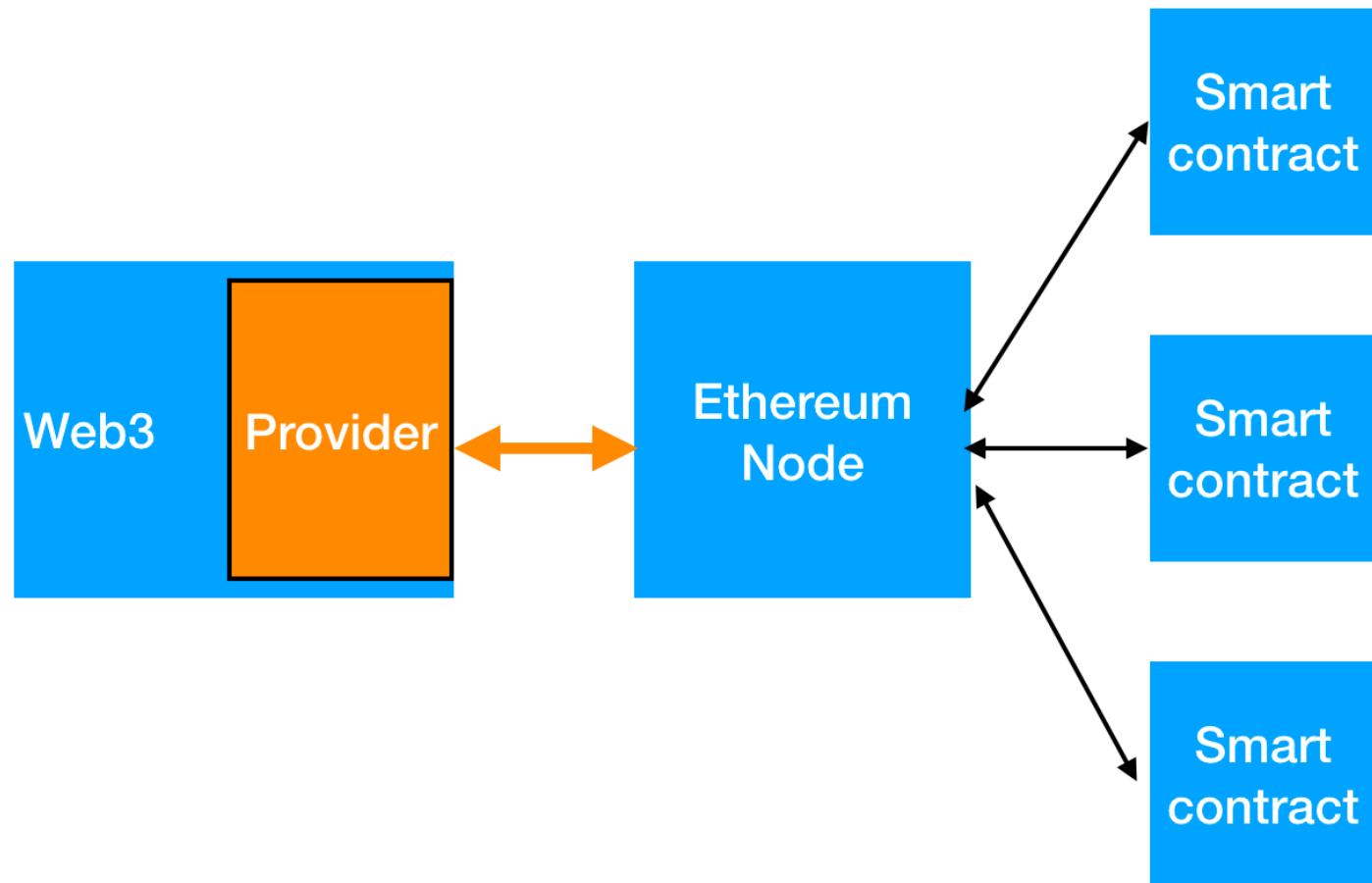
Wallet

- Provider
- Wallet address
- Network

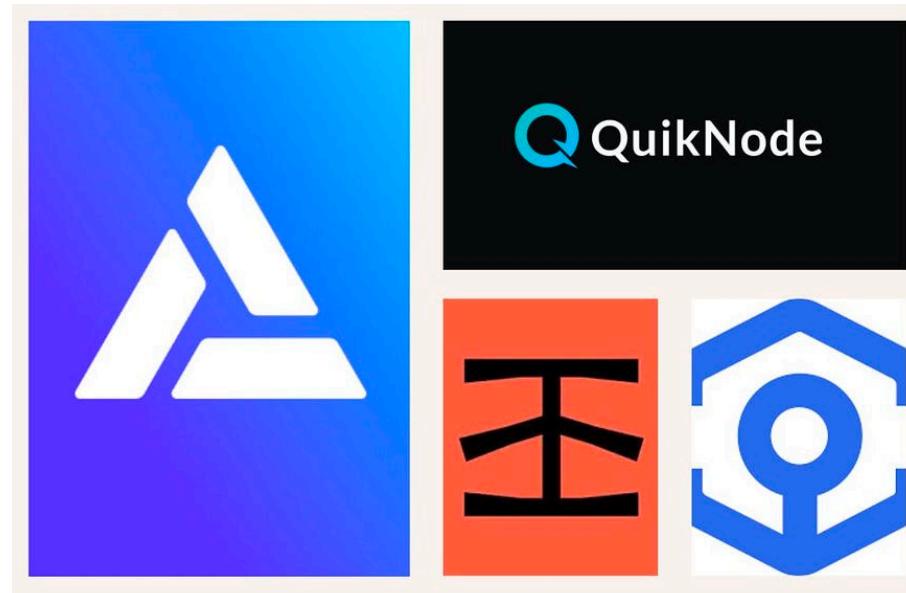
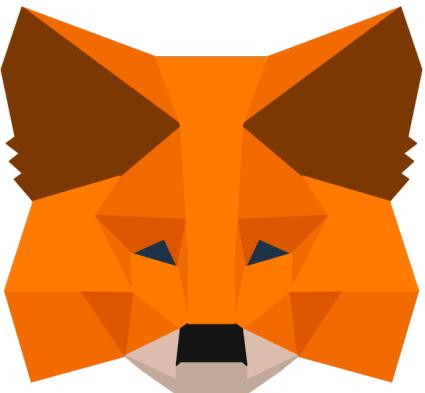
Read and write

```
{  
  "constant": true,  
  "inputs": [],  
  "name": "name",  
  "outputs": [  
    {  
      "name": "",  
      "type": "string"  
    }  
  ],  
  "payable": false,  
  "stateMutability": "view",  
  "type": "function"  
}  
  
{  
  "constant": false,  
  "inputs": [  
    {  
      "name": "_to",  
      "type": "address"  
    },  
    {  
      "name": "_value",  
      "type": "uint256"  
    }  
  ],  
  "name": "transfer",  
  "outputs": [  
    {  
      "name": "",  
      "type": "bool"  
    }  
  ],  
  "payable": false,  
  "stateMutability": "nonpayable",  
  "type": "function"  
}
```

Provider



Wallet provider vs public nodes



</> example

Wallet provider

```
const metamaskProvider = window.ethereum;

const web3provider = new ethers.providers.Web3Provider(metamaskProvider);

const addresses = await web3provider.send("eth_requestAccounts", []);

const network = await web3provider.getNetwork();
```

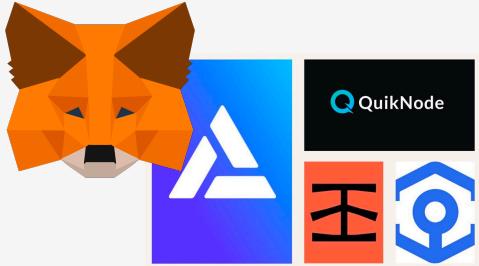
Public node provider

```
const rpcUrl = 'https://bsc-dataseed.binance.org';  
  
const provider = new providers.JsonRpcProvider(rpcUrl);
```

```
const contractManager = new ethers.Contract(  
    contractAddress,  
    abi,  
    provider  
)  
  
contractManager[methodName](...args);
```

```
const contractManager = new ethers.Contract(  
    contractAddress,  
    abi,  
    provider  
);
```

```
contractManager[methodName](...args);
```



```
{  
  "constant": true,  
  "inputs": [],  
  "name": "name",  
  "outputs": [  
    {  
      "name": "",  
      "type": "string"  
    }  
  ],  
  "payable": false,  
  "stateMutability": "view",  
  "type": "function"  
}
```

```
{  
  "constant": false,  
  "inputs": [  
    {  
      "name": "_to",  
      "type": "address"  
    },  
    {  
      "name": "_value",  
      "type": "uint256"  
    }  
  ],  
  "name": "transfer",  
  "outputs": [  
    {  
      "name": "",  
      "type": "bool"  
    }  
  ],  
  "payable": false,  
  "stateMutability": "nonpayable",  
  "type": "function"  
}
```

Let's try it out!

DApp x Defi that displays our current
BUSD balance and allow us to transfer
BUSD to other wallets



#	Name	Price	1h %	24h %	7d %	Market Cap	Volume(24h)	Circulating Supply	Last 7 Days	More
3	Tether USDT	\$1.00	▼ 0.01%	▼ 0.01%	▼ 0.04%	\$82,843,945,258 19,775,615,517 USDT	\$19,780,709,058	82,822,627,517 USDT		⋮
5	USD Coin USDC	\$0.9999	▼ 0.01%	▼ 0.01%	▼ 0.01%	\$29,807,030,515	\$2,810,844,713 2,810,852,630 USDC	29,808,927,840 USDC		⋮
14	Binance USD BUSD	\$1.00	▲ 0.03%	▲ 0.03%	▲ 0.03%	\$5,562,181,432	\$1,801,040,854 1,800,541,917 BUSD	5,559,434,150 BUSD		⋮
17	Dai DAI	\$0.9998	▼ 0.01%	▲ 0.01%	▲ 0.01%	\$4,855,901,077	\$88,613,282 88,638,245 DAI	4,856,953,015 DAI		⋮
30	TrueUSD TUSD	\$0.9996	▲ 0.01%	▼ 0.00%	▼ 0.06%	\$2,091,332,137	\$1,398,423,381 1,398,506,181 TUSD	2,092,077,545 TUSD		⋮

The top 5 stablecoins based on their capitalization. Source: CoinMarketCap

```
const provider = new ethers.providers.Web3Provider(window.ethereum);
const signer = provider.getSigner();
const userAddress = await signer.getAddress();

const busd = {
  address: "0x68ec573C119826db2eaEA1Efbfc2970cDaC869c4",
  abi: [
    "function balanceOf(address _owner) public view returns (uint256 balance)",
    "function transfer(address _to, uint256 _value) public returns (bool success)",
  ],
};

const busdContract = new ethers.Contract(busd.address, busd.abi, signer);

let busdBalancе = await busdContract.balanceOf(userAddress);

console.log(busdBalancе); // BigNumber {_hex: '0x7ce66c50e2840000', _isBigNumber: true}
console.log(ethers.utils.formatUnits(busdBalancе, 18)); // 9.0
```

```
const busdContract = new ethers.Contract(busd.address, busd.abi, signer);

const tx = await busdContract.transfer(receiver, amount);

const receipt = await tx.wait();
```

[Edit](#)

Binance Smart Chain - Testnet



Account 2



Account 1

New address detected! Click here to add to your address book.

<http://localhost:4200>[0xeD2...12Ee : TRANSFER](#)

1 BUSD

No conversion rate available

[DETAILS](#) [DATA](#) [HEX](#)[EDIT](#)**Estimated gas fee** ⓘ \$0.23 **0.000807 BNB**

Site suggested

Max fee: 0.00080702 BNB

Total \$0.23
1 BUSD + 0.000807 BNBAmount + gas
fee Max amount: 1 BUSD + 0.00080702
BNB[Reject](#)[Confirm](#)

```
const tx = await busdContract.transfer(receiver, amount);
console.log (`Transaction hash: ${tx.hash}`);
  
  

const receipt = await tx.wait();
console.log (`Transaction confirmed in block ${receipt.blockNumber}`);
```



Demo



Soumaya Erradi
soumayaerradi

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web3-angular-demo Public

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BRANCH NAME

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Thank you!

Soumaya Erradi

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