Aim:

To design and Implement Mini-project on Machine learning / Blockchain topics

PawFund - Decentralized Rescue System (DRS)

Theory

Animal rescue and adoption processes across the world face serious issues such as lack of transparency, fragmented systems, and misuse of donor funds. Many rescue centers and shelters work independently without a unified platform, making it difficult to track animals, manage resources, or build trust with donors and adopters. Inconsistent record-keeping and the absence of a verifiable system often discourage public participation and lead to inefficiencies in helping animals in need.

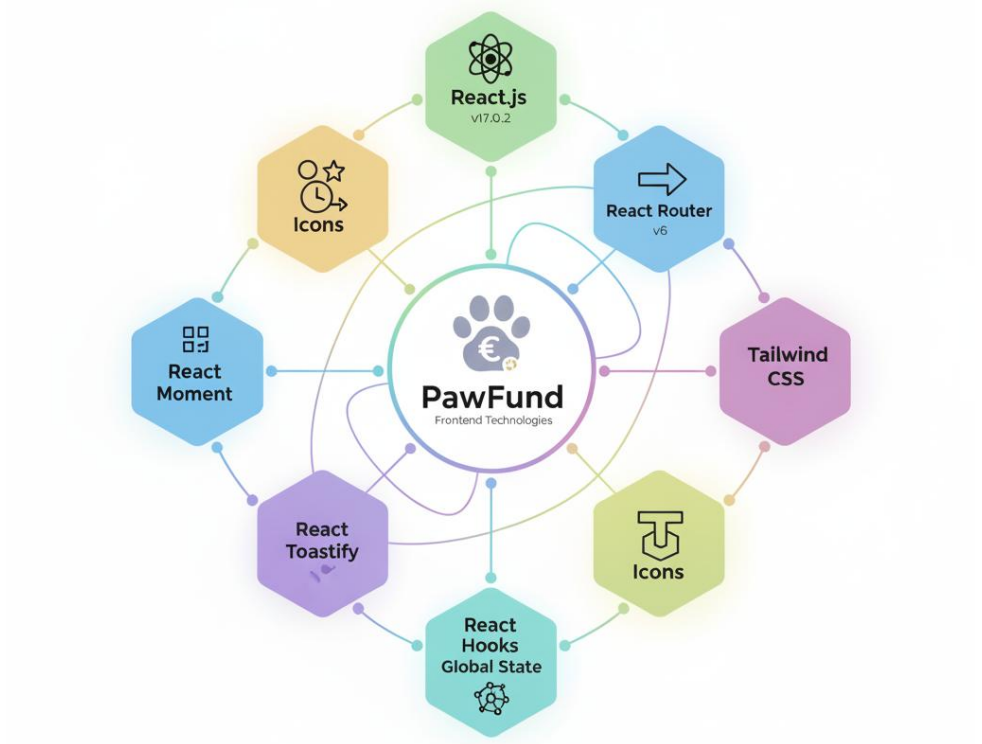
PawFund – Decentralized Rescue System (DRS) addresses these challenges by providing a blockchain-based platform that ensures transparent, secure, and verifiable rescue operations. Using smart contracts, all activities like animal registration, adoptions, and donations are immutably recorded on the blockchain, making them easily traceable and tamper-proof. PawFund connects shelters, volunteers, adopters, and donors in a decentralized network, removing the need for centralized authorities while ensuring fair and automated transactions.

By leveraging blockchain technology, PawFund empowers the animal welfare community with tools for trustless collaboration, verifiable fund distribution, and global accessibility.

The platform also introduces incentive mechanisms to encourage active participation from volunteers and donors, creating a self-sustaining ecosystem for animal rescue.

Tech Stack

Frontend:



Blockchain & Web3:

Steps performed

The implementation of the PawFund Decentralized Animal Rescue System involves several steps to ensure secure donation, rescue, and adoption management using blockchain technology.

Here's the core algorithm followed:

1. **User Authentication**
   - Connect user's digital wallet (MetaMask / Google) to the platform.
   - Authenticate user through wallet signature verification.

2. **Pet Listing**
   - Admin/shelter registers a new pet.
   - Pet details (name, breed, age, health info) are entered.
   - A smart contract function addPet() is called to store the pet on blockchain.

3. **Rescue Request**
   - Any user can create a rescue request by submitting rescue details.
   - Rescue request is stored on blockchain via createRescueRequest().

4. **Donation Process**
   - Donors select a rescue case to fund.
   - Donation amount is entered, and the smart contract donateToRescue() is invoked.
   - Transaction details are recorded immutably.

5. **Verification and Updates**
   - Admin verifies rescue status or adoption post-processing.
   - Records are updated via blockchain transaction calls.

Code- Solidity Code File (Blockchain):

```
//SPDX-License-Identifier: MIT
pragma solidity ^0.8.7;

contract Genesis { address
     public owner;
     uint public projectTax; uint
     public projectCount; uint
     public balance; statsStruct
     public stats;
     projectStruct[] projects;

     mapping(address => projectStruct[]) projectsOf; mapping(uint
     => backerStruct[]) backersOf; mapping(uint => bool) public
```

```
projectExist;

enum statusEnum {
    OPEN,
    APPROVED,
    REVERTED,
    DELETED,
    PAIDOUT
}


struct statsStruct { uint
    totalProjects; uint
    totalBacking; uint
    totalDonations;
}


struct backerStruct {
    address owner;
    uint contribution;
    uint timestamp;
    bool refunded;
}


struct projectStruct { uint
    id;
    address owner;
    string title;
    string description;
    string imageURL;
    uint  cost;
    uint raised;
    uint timestamp;
    uint expiresAt;
    uint backers;
    statusEnum status;
}


modifier ownerOnly(){
    require(msg.sender == owner, "Owner reserved only");
    _;
}


event Action (
    uint256 id,
    string actionType, address
    indexed executor, uint256
    timestamp
);
```

```
    constructor(uint _projectTax) {
        owner = msg.sender; projectTax
        = _projectTax;
    }


    function createProject(
        string memory title,
        string memory description,
        string memory imageURL, uint
        cost,
        uint expiresAt
    ) public returns (bool) { require(bytes(title).length > 0,
        "Title cannot be
empty");
        require(bytes(description).length > 0, "Description cannot be
empty");
        require(bytes(imageURL).length > 0, "ImageURL cannot be
empty");
        require(cost > 0 ether, "Cost cannot be zero");

        projectStruct memory project; project.id
        = projectCount; project.owner =
        msg.sender; project.title = title;
        project.description = description;
        project.imageURL = imageURL;
        project.cost = cost; project.timestamp =
        block.timestamp; project.expiresAt =
        expiresAt;

        projects.push(project);
        projectExist[projectCount] = true;
        projectsOf[msg.sender].push(project);
        stats.totalProjects += 1;

        emit Action (
            projectCount++,
            "PROJECT CREATED",
            msg.sender,
            block.timestamp
        );

        return true;
    }


    function updateProject( uint
        id,
        string memory title, string
        memory description, string
        memory imageURL, uint
        expiresAt
```

```
    ) public returns (bool) {
        require(msg.sender == projects[id].owner, "Unauthorized
Entity");
        require(bytes(title).length > 0, "Title cannot be empty");
        require(bytes(description).length > 0, "Description cannot be
empty");
        require(bytes(imageURL).length > 0, "ImageURL cannot be
empty");

        projects[id].title = title; projects[id].description =
        description; projects[id].imageURL = imageURL;
        projects[id].expiresAt = expiresAt;

        emit Action (
            id,
            "PROJECT UPDATED",
            msg.sender,
            block.timestamp
        );


        return true;
    }


    function deleteProject(uint id) public returns (bool) {
        require(projects[id].status == statusEnum.OPEN,
"Project no longer opened");
        require(msg.sender == projects[id].owner, "Unauthorized
Entity");

        projects[id].status = statusEnum.DELETED; performRefund(id);

        emit Action (
            id,
            "PROJECT DELETED",
            msg.sender,
            block.timestamp
        );


        return true;
    }


    function performRefund(uint id) internal {
        for(uint i = 0; i < backersOf[id].length; i++) { address
            _owner = backersOf[id][i].owner;
            uint _contribution = backersOf[id][i].contribution;

            backersOf[id][i].refunded = true;
            backersOf[id][i].timestamp = block.timestamp;
            payTo(_owner, _contribution);
```

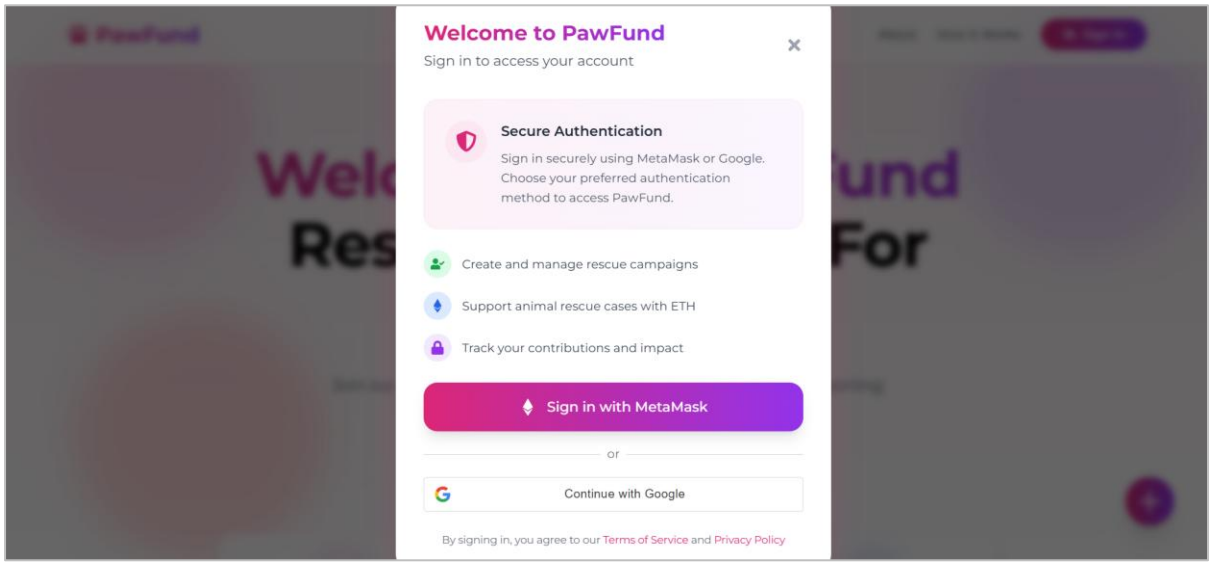
```
                stats.totalBacking -= 1; stats.totalDonations -=
                _contribution;
            }

        }


        function backProject(uint id) public payable returns (bool)
    {

            require(msg.value > 0 ether, "Ether must be greater
    than zero");
            require(projectExist[id], "Project not found");
            require(projects[id].status == statusEnum.OPEN,
    "Project no longer opened");
            stats.totalBacking += 1;
            stats.totalDonations += msg.value;
            projects[id].raised += msg.value;
            projects[id].backers += 1;

            backersOf[id].push(
                backerStruct(
                    msg.sender,
                    msg.value,
                    block.timestamp,
                    false
                )

            );


            emit Action (
                id,
                "PROJECT BACKED",
                msg.sender,
                block.timestamp
            );

            if(projects[id].raised >= projects[id].cost) {
                projects[id].status = statusEnum.APPROVED; balance +=
                projects[id].raised; performPayout(id);
                return true;
            }

            if(block.timestamp >= projects[id].expiresAt) {
                projects[id].status = statusEnum.REVERTED;
                performRefund(id);
                return true;
            }


            return true;
```

```
    }

    function performPayout(uint id) internal { uint
        raised = projects[id].raised;
        uint tax = (raised * projectTax) / 100; projects[id].status =

        statusEnum.PAIDOUT; payTo(projects[id].owner, (raised - tax));

        payTo(owner, tax);

        balance -= projects[id].raised; emit

        Action (
            id,
            "PROJECT PAID OUT",
            msg.sender,
            block.timestamp
        );
    }

    function requestRefund(uint id) public returns (bool) { require(
            projects[id].status != statusEnum.REVERTED ||
            projects[id].status != statusEnum.DELETED, "Project
            not marked as revert or delete"
        );

        projects[id].status = statusEnum.REVERTED; performRefund(id);
        return true;
    }

    function payOutProject(uint id) public returns (bool) {
        require(projects[id].status == statusEnum.APPROVED,
"Project not APPROVED"); require(
            msg.sender == projects[id].owner || msg.sender ==
            owner,
            "Unauthorized Entity"
        );

        performPayout(id);
        return true;
    }

    function changeTax(uint _taxPct) public ownerOnly { projectTax =
        _taxPct;
    }

    function getProject(uint id) public view returns (projectStruct
```

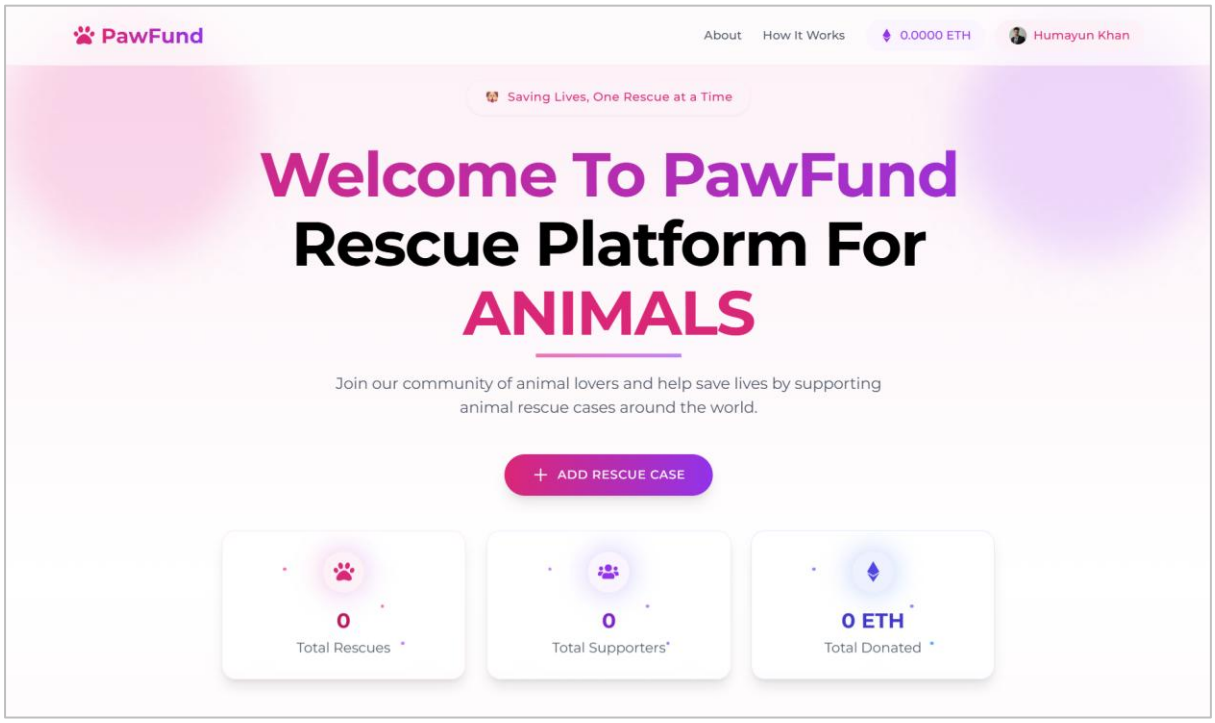
```
memory) {
          require(projectExist[id], "Project not found");
          return projects[id];
     }

     function getProjects() public view returns (projectStruct[] memory)
{
          return projects;
     }


     function getBackers(uint id) public view returns (backerStruct[]
memory) {
          return backersOf[id];
     }


     function payTo(address to, uint256 amount) internal {
          (bool success, ) = payable(to).call{value: amount}("");
          require(success);
     }
}
```

Output screenshots

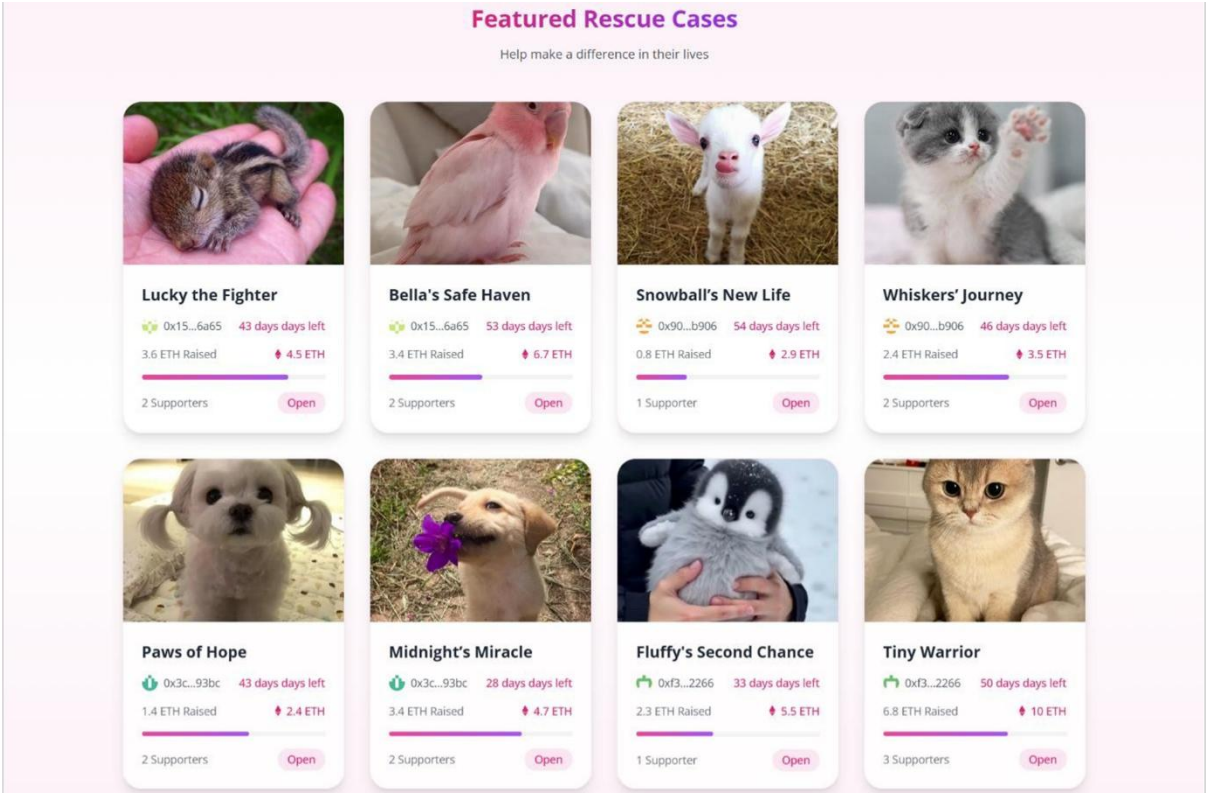
Welcome Page:



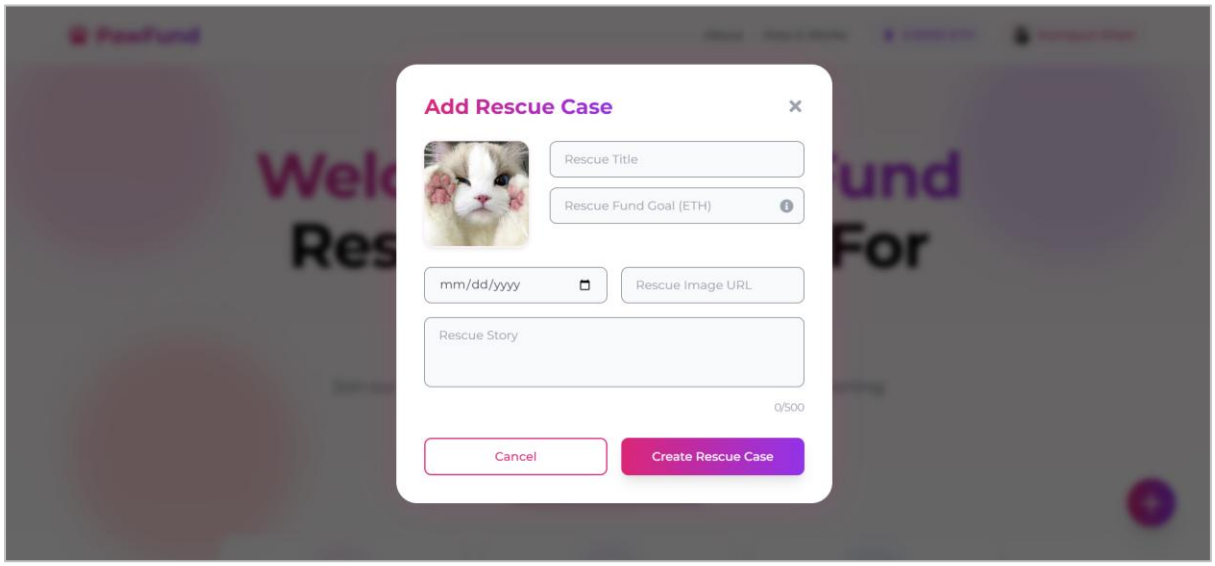
Homepage:



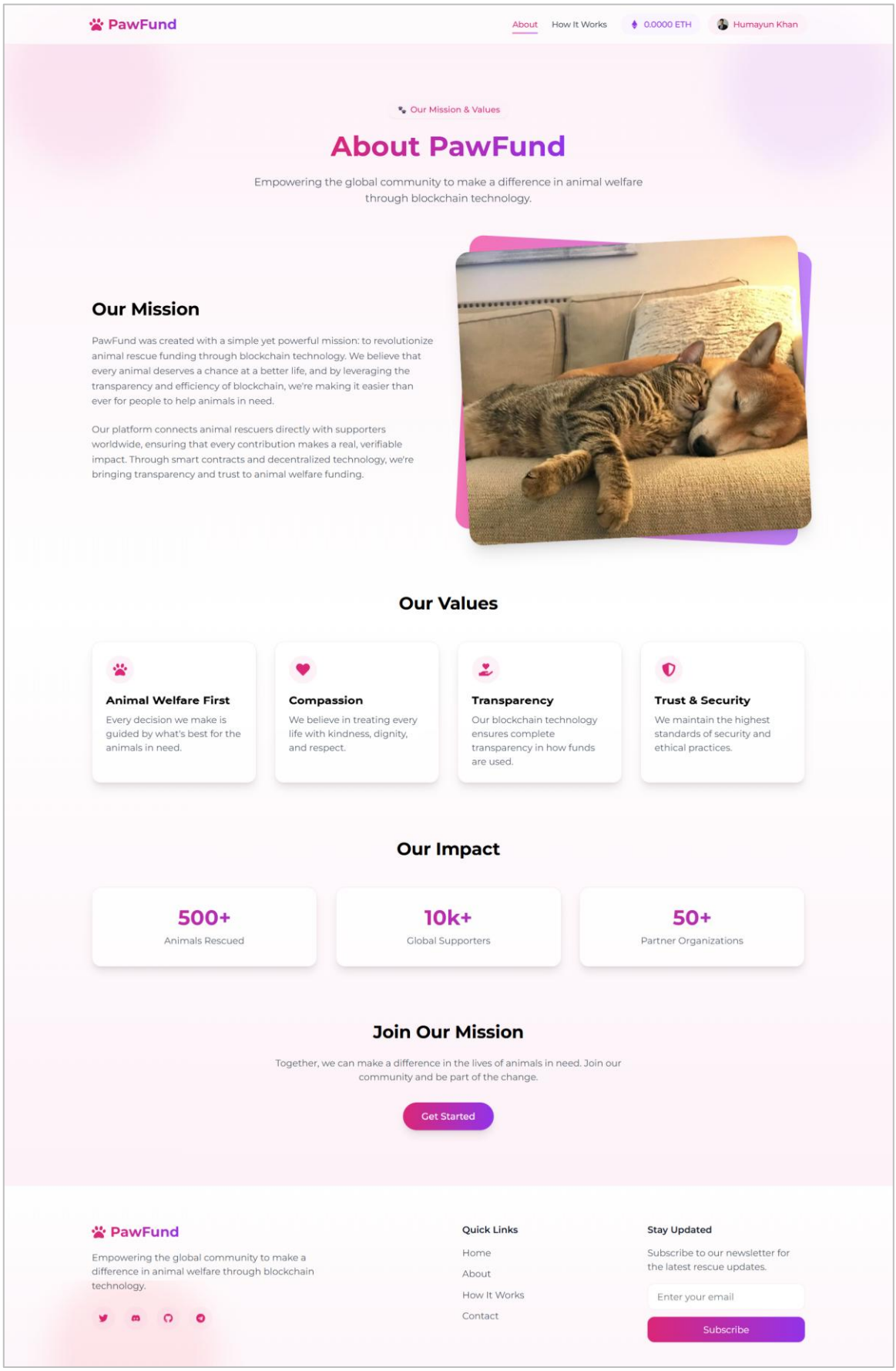
Rescue cases dashboard:



Create rescue case:



About us:


PawFund
About
How It Works
0.0000 ETH
Humayun Khan
Our Mission & Values
About PawFund
Empowering the global community to make a difference in animal welfare through blockchain technology.
Our Mission
PawFund was created with a simple yet powerful mission: to revolutionize animal rescue funding through blockchain technology. We believe that every animal deserves a chance at a better life, and by leveraging the transparency and efficiency of blockchain, we're making it easier than ever for people to help animals in need.
Our platform connects animal rescuers directly with supporters worldwide, ensuring that every contribution makes a real, verifiable impact. Through smart contracts and decentralized technology, we're bringing transparency and trust to animal welfare funding.
Our Values
Animal Welfare First
Every decision we make is guided by what's best for the animals in need.
Compassion
We believe in treating every life with kindness, dignity, and respect.
Transparency
Our blockchain technology ensures complete transparency in how funds are used.
Trust & Security
We maintain the highest standards of security and ethical practices.
Our Impact
500+
Animals Rescued
10k+
Global Supporters
50+
Partner Organizations
Join Our Mission
Together, we can make a difference in the lives of animals in need. Join our community and be part of the change.
Get Started
PawFund
Empowering the global community to make a difference in animal welfare through blockchain technology.
Quick Links
Home
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How It Works
Contact
Stay Updated
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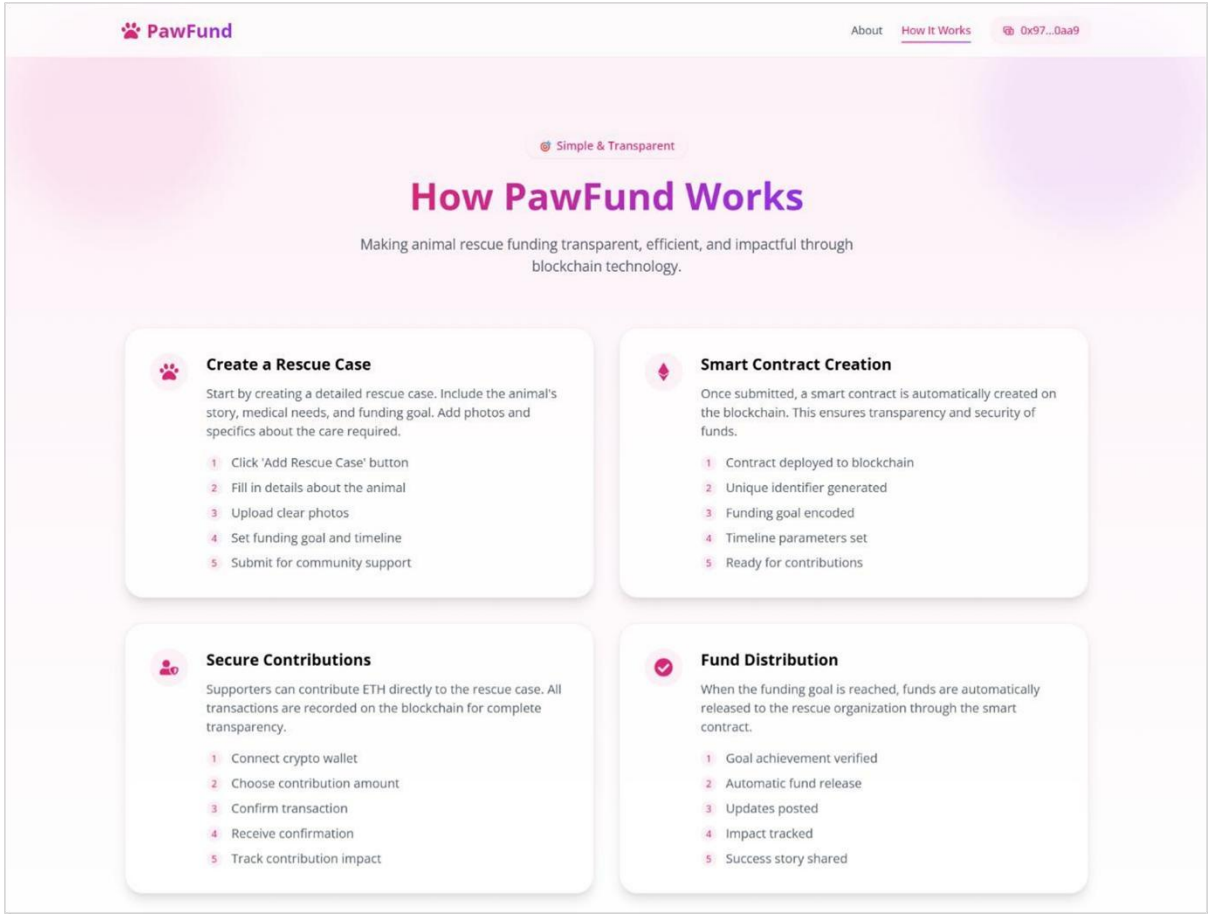
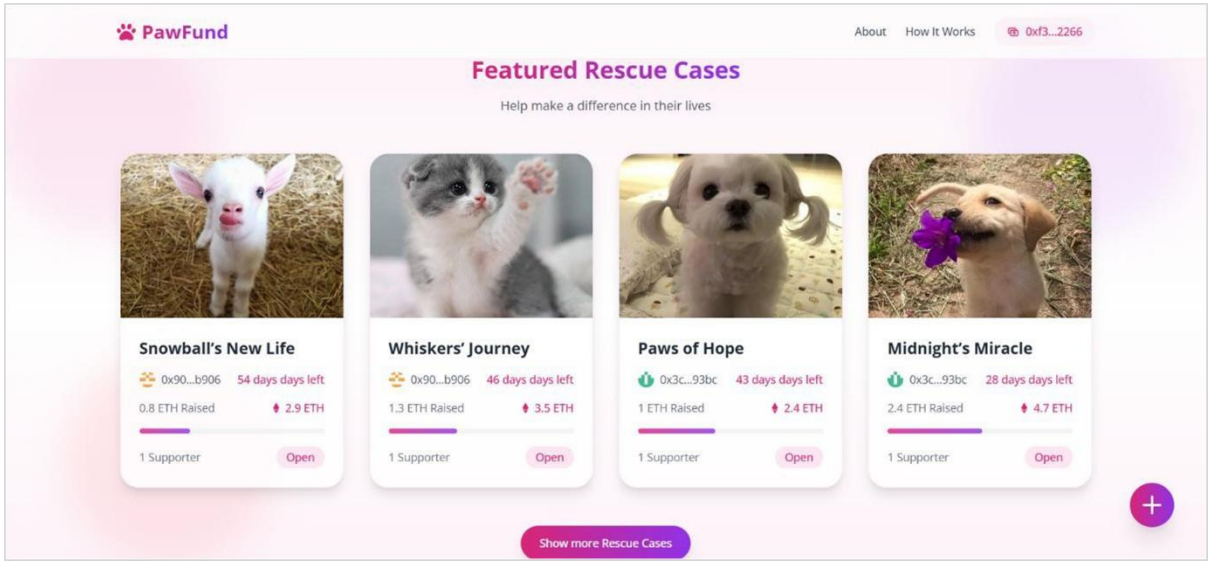
Enter your email
Subscribe

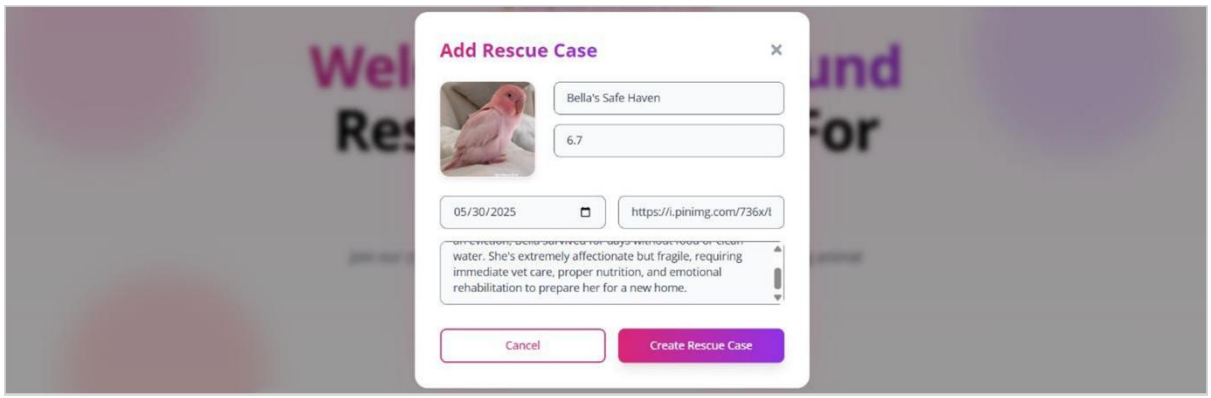
How it works:



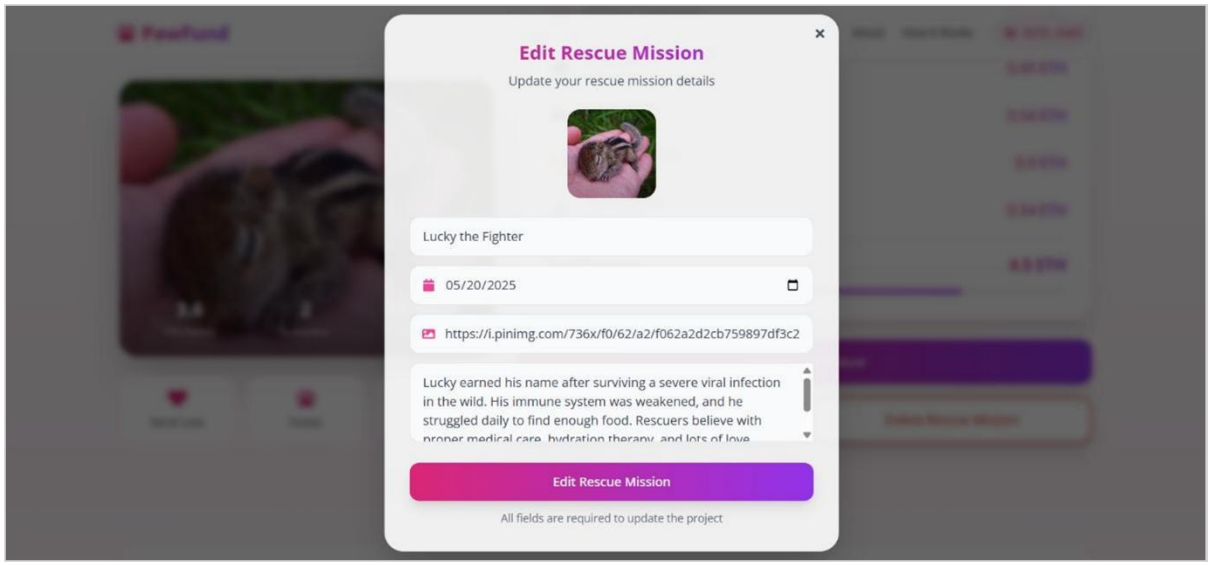
Featured cases:



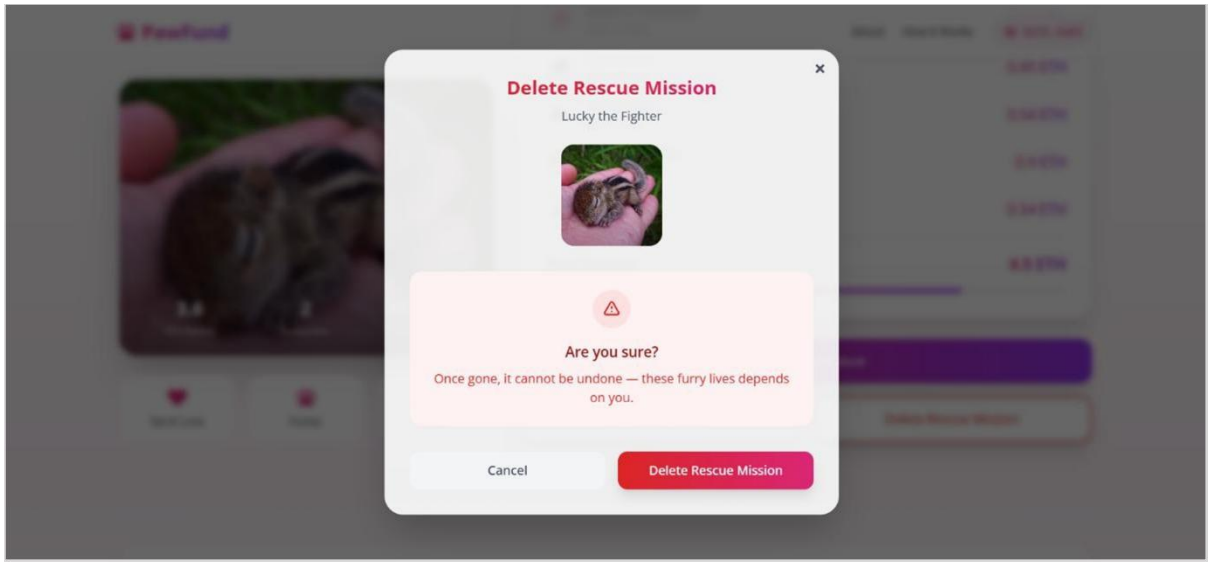
Create new case campaign:



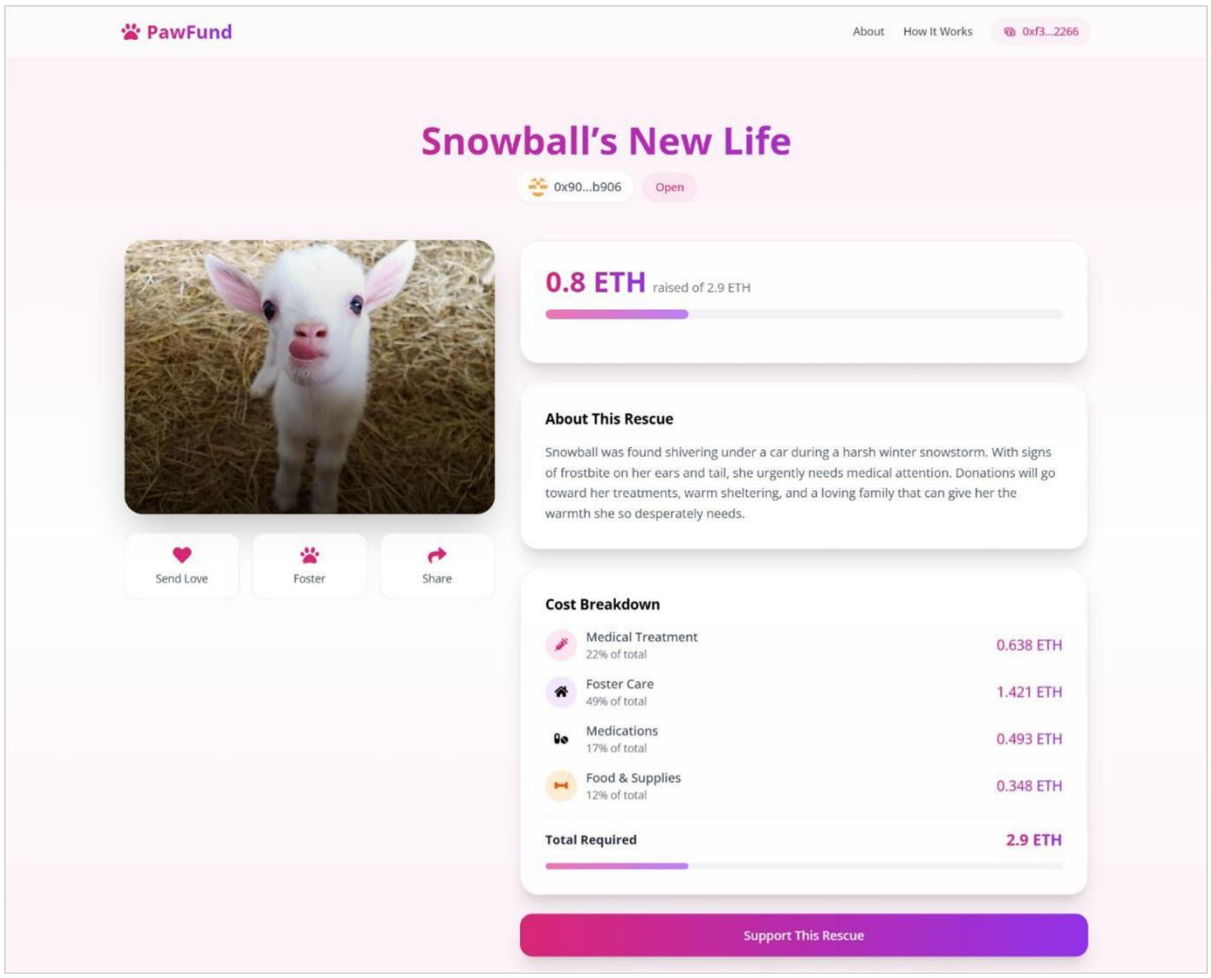
Edit Mission:



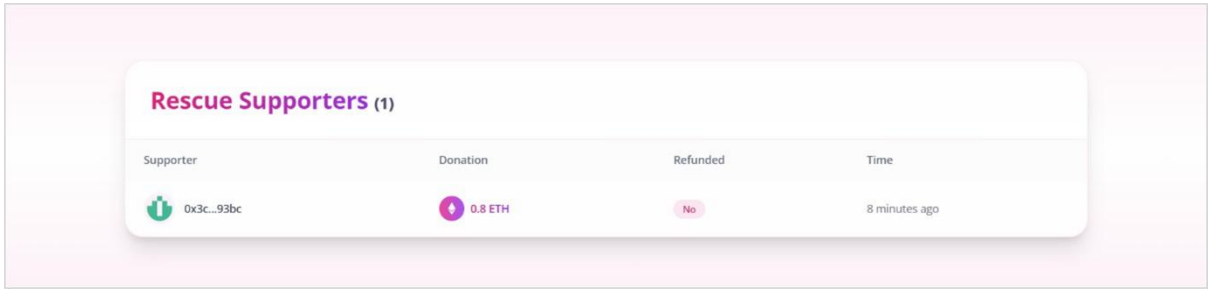
Delete Mission:



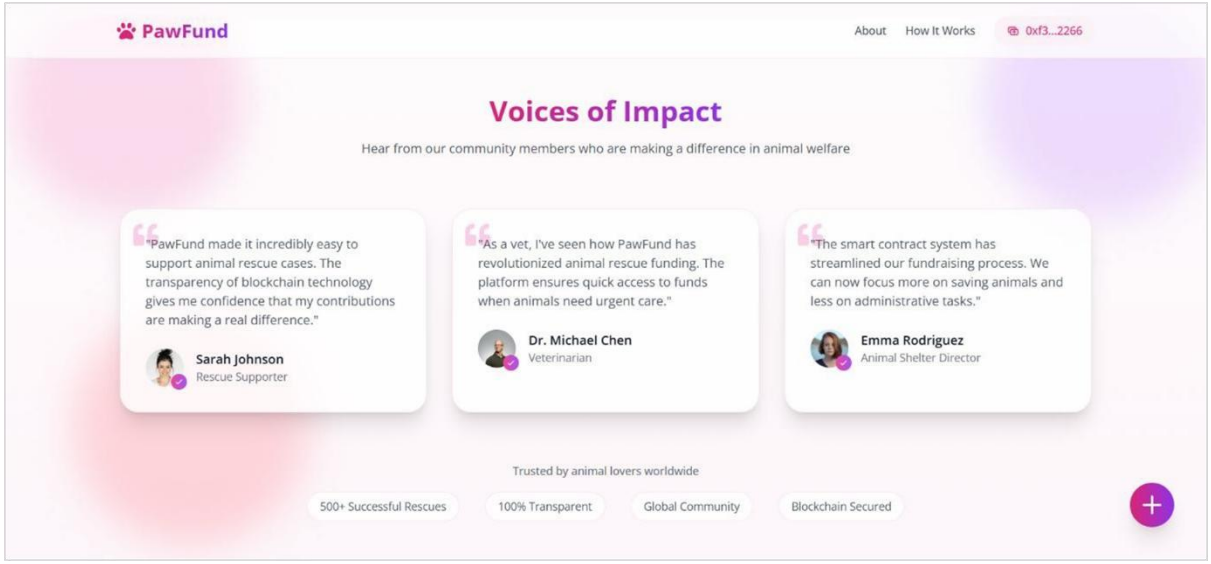
Support & Donation page:



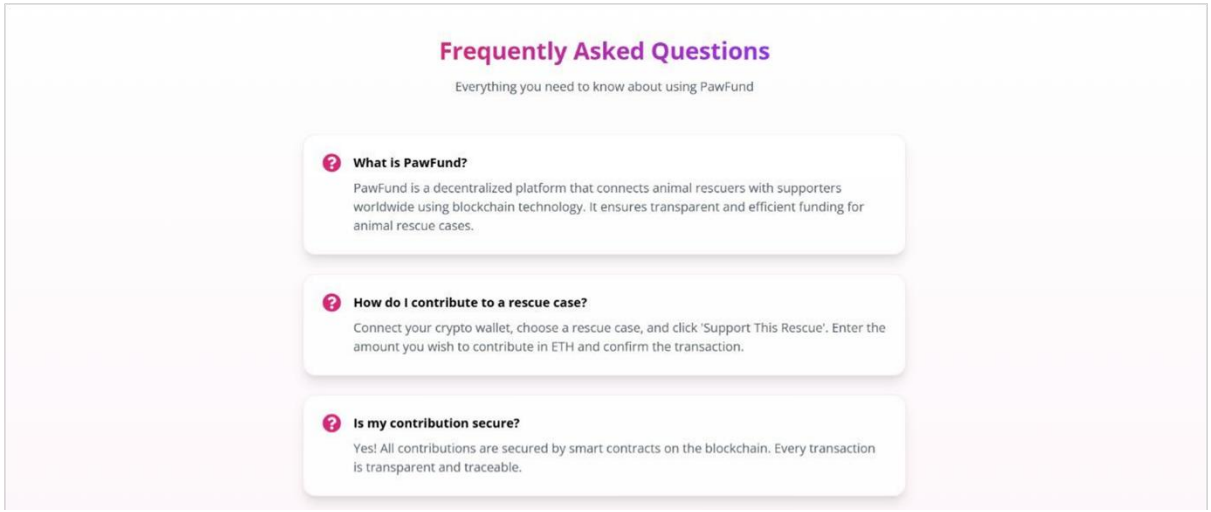
Supporters List:



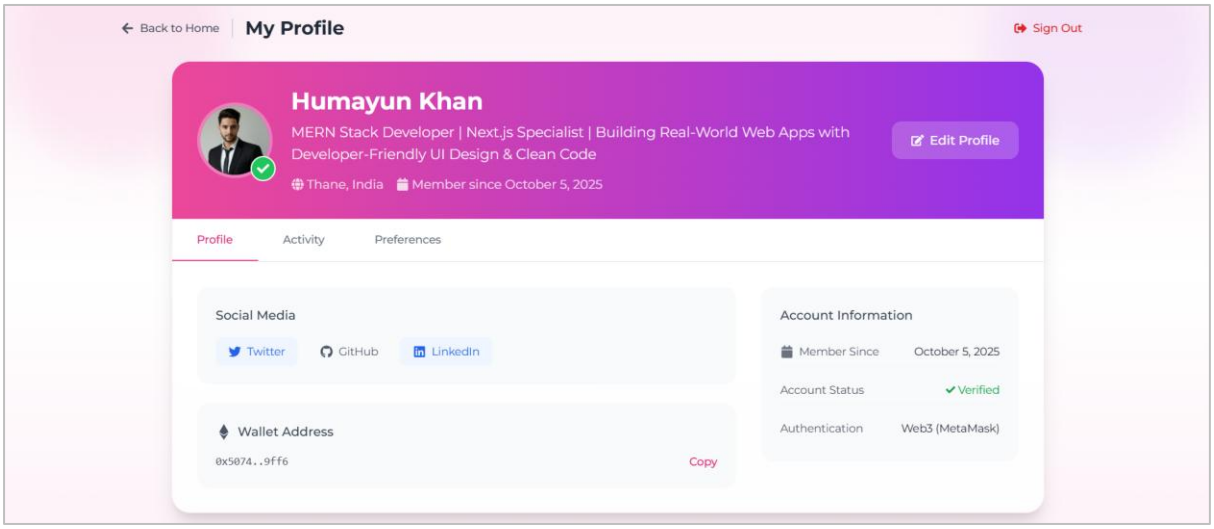
User testimonials:



FAQ Section:



Profile Page:



Conclusion

PawFund is a decentralized blockchain-based platform designed to transform global pet fundraising. By removing intermediaries, it ensures donations are transparent, secure, and directly reach animal shelters and rescue organizations. With blockchain's immutability and real-time tracking, donors gain unmatched trust and visibility, while decentralized storage (e.g., IPFS) safeguards sensitive campaign data. Despite its promise, challenges like regulatory compliance, user adoption, blockchain complexity, and scalability remain. Addressing these with user-friendly interfaces, multilingual support, smart contract enhancements, and integration with traditional banking can boost accessibility and impact.