Crowdvouched: A Decentralized Crowdsourcing Platform

Adam Kraft
October 10, 2024

v1.0

Abstract

Crowdvouched is a decentralized platform that transforms the process of data acquisition and validation through community-driven participation. Users create and manage data-centric projects, where contributors submit and verify data in exchange for project-specific tokens. These tokens are minted upon the successful validation of data, backed by project treasuries funded through donations and other revenue streams.

The inaugural project on Crowdvouched focuses on digitizing the 1850 U.S. Census, demonstrating the platform's potential before expanding to other applications. Through decentralized crowdsourcing and a robust token economy, Crowdvouched aims to provide a scalable, secure, and transparent solution for a wide range of data acquisition needs.

Introduction

Problem Statement

Traditional crowdsourcing methods face significant challenges that hinder their effectiveness. These challenges include:

1. **Centralization**. Traditional data collection methods are often centralized, relying on a single entity or a limited group of validators to gather and verify information. This centralization can lead to issues of trust, as users must rely on the integrity and competence of these centralized entities. Additionally, centralization introduces the risk of data manipulation, corruption, or bias, which can compromise the quality and reliability

of the collected data.

2. **Scalability**. The process of gathering and validating large volumes of data through centralized methods is inherently slow and resource-intensive. This lack of scalability hampers the ability to efficiently manage and process data, particularly for large-scale projects such as historical digitization or public record verification.

3. **Incentive Misalignment**. In many traditional data collection models, there is little to no direct incentive for individuals to participate in the data acquisition or validation process. Without adequate rewards, the motivation to contribute accurate data is diminished, leading to lower data quality and reduced engagement from potential contributors.

4. **Data Accessibility**: In a world where big data drives innovation and decision-making, much of this data is not easily accessible to the public. Data is often controlled by centralized organizations, such as governments or corporations, which impose significant restrictions on access. APIs, if available, are typically limited to registered users who must provide personal information to obtain an API key. These APIs often come with rate limits and may require payment for access, further restricting the ability of users to fully utilize the data. Additionally, there is always the risk that these APIs could be shut down, rendering any dependent applications inoperable. This lack of open access hinders innovation, transparency, and the potential for widespread data use.

5. **Data Integrity and Verification**: Ensuring the accuracy and integrity of data is a significant challenge, especially when dealing with large datasets. Traditional methods often lack the robust verification mechanisms needed to guarantee data accuracy, leading to errors and inconsistencies that can undermine the value of the data.

6. **Barriers to Participation**: Existing data collection frameworks can be difficult for individuals to engage with, either due to complexity, lack of transparency, or insufficient rewards. These barriers prevent a broader pool of potential contributors from participating, limiting the diversity and comprehensiveness of the data collected.

These challenges highlight the need for a more effective and decentralized approach to data acquisition and validation—one that leverages community participation, aligns incentives, and ensures the highest standards of data integrity and accessibility. Crowdvouched is designed to address these challenges, providing a scalable, transparent, and secure platform for data-driven projects across a wide range of applications.

Solution Overview

Decentralized Crowdsourcing. Crowdvouched is a decentralized crowdsourcing model, which enables a global community of users to collectively gather and validate data. Unlike traditional methods that rely on centralized entities, Crowdvouched distributes the responsibility of data collection across a diverse network of participants. This approach significantly enhances the scalability of data acquisition efforts, allowing even the largest and most complex projects to be completed efficiently.

Crowdsourcers on the platform are incentivized through project-specific tokens, which are minted and rewarded upon the successful validation of their data submissions. This token-based reward system ensures that participants are directly motivated to contribute accurate data. The platform's reputation system further ensures data integrity by rewarding users who consistently submit correct data and penalizing those who do not.

All data submissions, validations, and token transactions are transparently recorded on the blockchain. This eliminates the risks associated with centralization, such as data manipulation, corruption, or unauthorized access.

Each project on Crowdvouched is associated with its own token, providing a unique economic ecosystem that aligns the interests of all stakeholders. The platform's token economy not only incentivizes participation but also ensures that the value generated by successful projects is fairly distributed among contributors.

Data Accessibility. One of the key advantages of Crowdvouched is its commitment to improving data accessibility. By decentralizing data storage and making it publicly accessible via decentralized storage networks, such as Arweave, Crowdvouched ensures that valuable data is readily available to anyone, anywhere. This approach addresses the limitations of traditional data APIs, which are often restricted, centralized, and vulnerable to shutdowns. With

Crowdvouched, data is not only accurately collected and verified but also made permanently accessible without the typical barriers of registration, rate limits, or fees. This democratization of data access empowers developers, researchers, and the general public to innovate and build upon a reliable foundation of open data.

A Versatile Solution. While the platform's inaugural project focuses on digitizing the 1850 U.S. Census, Crowdvouched is designed to support a wide array of data-driven initiatives. Crowdvouched's flexible and modular architecture can be applied to virtually any project that requires accurate and trustworthy data collection.

As the platform evolves, it will open up to new projects, each with its own token and economic model, allowing for a diverse range of applications and use cases. Crowdvouched is more than just a data collection tool; it is a comprehensive solution that addresses the fundamental challenges of data acquisition, validation, and accessibility.

Crowdvouched Platform Overview

Core Features

Crowdvouched is built around a set of core features that enable seamless data acquisition, validation, and management through decentralized crowdsourcing. These features are designed to ensure data integrity, incentivize participation, and provide a flexible framework for a wide range of data-driven projects.

Data Submission

At the heart of Crowdvouched is its decentralized data submission system, which empowers users to contribute data to various projects. Each project on the platform is broken down into smaller, manageable data records, which are assigned to crowdsourcers. These data records could range from specific entries in historical records, such as census data, to modern-day information verification tasks.

Crowdsourcers submit data through a Farcaster Frame that guides them in providing the necessary details for each data record. Once a submission is made, it is recorded on the blockchain.

Validation Mechanisms

Data validation is a critical component of the Crowdvouched platform, ensuring that the data collected is accurate and reliable. After a crowdsourcer submits a data record, it undergoes an asynchronous validation process where the same data record is independently assigned to a second crowdsourcer.

When a second crowdsourcer submits the same data piece, their submission is compared to the first submission. If the two submissions match 100%, the data is automatically validated and considered correct. This is called "optimistic validation".

Once a data record is validated, both crowdsourcers receive a newly minted project-specific token as a reward. These tokens are generated upon successful validation and represent a share in the project's value. This reward system incentivizes accurate data submission and active participation, as crowdsourcers are directly compensated for their contributions.

If there is a discrepancy between the two submissions, the data record is assigned to a third crowdsourcer. This process continues until a consensus is reached. Once two matching submissions are confirmed, the data record is officially validated and recorded on the blockchain.

The asynchronous nature of this validation process allows Crowdvouched to efficiently manage data verification across a large number of users, while also ensuring that each data record undergoes rigorous scrutiny before being accepted. The reward mechanism further motivates crowdsourcers to participate actively and maintain high standards of accuracy in their submissions.

Project Creation

Crowdvouched provides a flexible framework for creating data-driven projects. Users who wish to initiate a new project on the platform can do so by following a simple project creation process, which involves defining the scope of the project, the data records required, and the rules for data submission and validation.

To start a project, users must stake a certain amount of the platform's native tokens, which serves as a commitment to the project's success. This staking requirement ensures that project

creators are incentivized to see the project through to completion. Once the project is created, it is listed on the Crowdvouched platform, where crowdsourcers can begin submitting data.

Reputation System

The Crowdvouched reputation system is designed to maintain data quality and reward accuracy. Each crowdsourcer on the platform has a reputation score, which starts at a default level and adjusts based on the accuracy of their submissions.

When a crowdsourcer's data record is validated as correct, their reputation score increases. This higher reputation serves as a reflection of the crowdsourcer's reliability and accuracy. It may provide advantages in future projects, where certain tasks could have minimum reputation requirements.

If a data record submission is found to be inaccurate, the crowdsourcer's reputation score decreases in proportion to the degree of incorrectness. For instance, a partially correct submission incurs a smaller penalty than a completely incorrect one. This nuanced approach to adjusting reputation encourages crowdsourcers to submit data with care and precision.

Project-Specific Tokens

Crowdvouched introduces an innovative use of project-specific ERC20 tokens to drive the economic model of each project. When a project is launched, a unique token is created, dynamically minted as the project progresses. Tokens are distributed as rewards for crowdsourcers who validate data records. Each time two crowdsourcers submit matching data for a task, the record is validated, and both participants receive one newly minted token for their correct submission.

The value of these tokens is tied to the project's treasury, which is funded through donations, NFT sales, and other contributions. As the project moves forward, the treasury grows via yield-generating strategies, ensuring that token holders benefit from increased value. Once the project is completed, token holders can redeem their tokens for a share of the treasury, providing tangible financial value, and each redeemed token is subsequently burned.

Additionally, project-specific tokens offer flexibility in how they are used. They can be traded immediately after minting, providing liquidity to participants. Even after a project is completed,

tokens may hold continued value through post-completion trading, backed by ongoing treasury growth from retroactive contributions and NFT royalties. This dynamic token system ensures that contributions to the project are rewarded while aligning the interests of all stakeholders.

Technical Architecture

Crowdvouched is built on Base, an Ethereum Layer 2 chain. It integrates on-chain components, decentralized storage networks, and off-chain elements such as Farcaster Frames and relayers. This hybrid approach enables the platform to handle large-scale data acquisition projects.

Workflow

1. Campaign Creation. A user starts by defining the campaign’s name, description, and the locator data required to identify records. Locator data is the data crowdsourcers will use to locate the records.

When the user deploys the campaign, the campaign's smart contracts are deployed to Base. In addition, the locator data is uploaded to Arweave for permanent storage. Once deployed, the campaign becomes active on Crowdvouched, allowing crowdsourcers to participate by requesting records and submitting data. In addition, anyone who supports the campaign can send ETH to the campaign's treasury.

2. Farcaster Frame. Crowdsourcers interact with Crowdvouched through a Farcaster Frame. In the Frame, they select a campaign and press the "Start" button to be assigned a record by the campaign's smart contract. The Frame displays the locator data that the crowdsourcer will use to find the corresponding record. The crowdsourcer enters the data one field at a time until all fields are complete. After pressing "Submit," the data is sent to Crowdvouched for processing. They can then press "Start" again to receive another record.

3. Record Assignment. Crowdvouched employs a relayer service to manage the assignment of records to crowdsourcers efficiently and cost-effectively.

1. When a crowdsourcer requests a record by pressing the "Start" button in the Farcaster Frame, they sign a meta-transaction. This signature authorizes the assignment request without requiring the user to pay gas fees directly.

2. The signed meta-transaction is sent to a relayer service, which submits the transaction to the campaign's smart contract on behalf of the crowdsourcer. The relayer covers the gas costs, allowing the crowdsourcer to participate without incurring fees.
3. The smart contract assigns the next available locator data to the crowdsourcer.
4. The assignment is logged on-chain.

4. Data Submission. When a crowdsourcer submits the data from the Farcaster Frame, they sign a meta-transaction. The signed meta-transaction is sent to a relayer service, which uploads the submission data to IPFS for temporary storage. The relayer then notifies the campaign's smart contract that a submission has occurred. If they like, the crowdsourcer can request another record through the Farcaster Frame.

5. Data Validation. When the relayer notifies the campaign's smart contract that a submission has occurred, it checks the status of the locator data. If it is the locator data's first time submission, the smart contract is updated and the locator data is eligible to be assigned to a second crowdsourcer. If it is the locator data's second submission, the smart contract compares the two submissions by pulling the submission data from IPFS. If the two submissions are a 100% match, the data record is considered validated and the following actions occur:

- The contract is updated to reflect that the data record is validated and is no longer eligible to be assigned.
- A campaign token is minted as a reward for both crowdsourcers.
- The crowdsourcers' reputation score is updated.
- The relayer uploads the data record to Arweave for permanent storage.
- The data record becomes eligible to be minted as an NFT.

If the two submissions do not match, the contract is updated and the locator data is eligible to be assigned to a third crowdsourcer. This process continues until two submitted records get a 100% match.

6. Campaign Completion. When all locator records are validated, the campaign is closed. Campaign tokens can now be redeemed for a proportion of the campaign treasury. The treasury exists forever, as long as there is at least one campaign token in existence.

Smart Contracts

Campaign

The Campaign contract manages the creation and configuration of crowdsourcing campaigns. This contract stores campaign details and links the on-chain data with the off-chain data stored on Arweave. It includes the definitions needed to identify and digitize records. The Data Locator Definitions guide crowdsourcers in locating specific records, while the Data Record Definitions specify the fields that crowdsourcers must populate for each record.

When a new campaign is created, the campaign creator provides key details, which are stored in the smart contract:

- **campaignName**: The name of the campaign.
- **campaignDescription**: A brief description of the campaign.
- **ownerID**: The Ethereum address of the campaign creator.
- **DataLocatorField[]**: The fields required to locate specific records. For example, for the 1850 U.S. Census, this might include state, county, page number, and line number.
- **DataRecordField[]**: The fields that crowdsourcers must populate for a specific data record. For example, for the 1850 U.S. Census, this might include fields like first_name, last_name, age, and others.

During campaign creation, the specific locator data (e.g., state, county, page number, and line number) is uploaded to Arweave. The Arweave transaction ID, generated during the upload process, is stored in the Campaign Contract. This creates a permanent link between the on-chain campaign details and the off-chain locator data.

SubmissionManager

The Submission Manager contract is responsible for managing the assignment of data records to crowdsourcers. This contract ensures that records are distributed efficiently, fairly, and transparently, tracking which crowdsourcers are working on which records and preventing duplicate work. It works in conjunction with the Campaign contract to ensure that records from a campaign are handled correctly.

When a crowdsourcer requests a record via the Farcaster Frame, the contract checks for available records from the associated campaign. If the crowdsourcer has previously worked on that record, they will not be assigned the same record again. Records can either be new records or previously worked-on records.

The contract only holds records currently being worked on and removes them once the validation process is completed. This ensures that the contract's storage doesn't get too big. Since Locator Data has sequential IDs, determining the next record to assign is simple. When a record is assigned to a crowdsourcer, the following details are recorded:

The contract will have an array of records that are being validated. The Record object will look like this:

- **recordID**: The unique identifier of the record. It is an integer, from 1 to the maximum number of records.
- **assignedTo**: The Ethereum address of the crowdsourcer currently assigned to the record.
- **assignedAt**: The timestamp of when the record was assigned to the crowdsourcer.
- **ipfsCID**: The IPFS location of the submission data.
- **submitters[]**: An array storing the addresses of crowdsourcers who have previously submitted this record.

In addition, the contract will store the following fields:

- **records[]**: An array of Record objects. These are records that are currently being validated by crowdsourcers. They are either currently assigned or waiting for another crowdsourcer to pick them up.
- **nextAvailableRecord**: The next record to be validated. Initially this is set to 1. When the first record is assigned, this field is incremented by 1.

When a crowdsourcer requests a record, the contract first checks if there are any active records that can be assigned to them. If a record's `assignedTo` field is null and the crowdsourcer has not previously submitted the record (by checking for their address in the submissions array),

then the record is assigned to them. If none of these requirements are met, then the next available record is assigned to them. This comes from `nextAvailableRecord`. If that happens, a new record is added to the records array and it is assigned to the requesting crowdsourcer.

When a crowdsourcer is assigned a record, they use the locator data to find the record data. They enter this into the Farcaster Frame and submit it. When the relayer receives a submission, it calls the contract to see if the record was previously submitted. If not, the submitted data is uploaded to IPFS for temporary storage. The relayer updates the smart contract with the IPFS address and the record's `assignedTo` and `assignedAt` fields are set to null. The submitter's Ethereum address is appended to the submitters array.

If the record was previously submitted, as in one or more crowdsourcers have already submitted it, then the contract compares the previous submissions to the current submission. If there is a match, as in 100% of the fields match, then the record is considered validated. The following occurs:

1. The record is removed from the records array.
2. The reputation scores for all submitting crowdsourcers is updated. The contract stores an array of crowdsourcers who have submitted records. It stores an array of their submission scores. These are based on how correct their submissions were. For example, if the submission is correct, the score is 100. If the score is incorrect but it was 90% correct, the score is 90.
3. Two project tokens are minted for the two correct crowdsourcers.

CampaignTreasury

The CampaignTreasury contract is an Ethereum wallet responsible for managing the financial operations of the Crowdvouched platform. This includes managing the project's ETH treasury, minting project-specific tokens, and allowing users to exchange these tokens for a portion of the treasury.

When a campaign is created, anyone can contribute by sending ETH to the CampaignTreasury address. The treasury manages these funds by placing them in a DeFi platform to earn interest. The treasury grows over time through interest earned, retroactive contributions, NFT mint fees, and NFT sale royalties.

When a data record is successfully validated, the treasury mints a project token for each crowdsourcer who submitted a valid record. If they like, the crowdsourcer can immediately claim the token. They can also wait until they have accumulated multiple tokens, in order to save gas costs. Once a campaign is complete, crowdsourcers have one year to claim their tokens. After one year, the tokens are burned and they can no longer claim them.

Users holding project tokens can choose to redeem one or more tokens for a proportional share of the treasury's ETH. There is no time limit for token redemption. The treasury exists forever unless all tokens are redeemed.

The Treasury Contract plays a central role in the Crowdvouched ecosystem by ensuring the proper management of ETH funds and fair distribution of rewards to participants, while maintaining the financial sustainability of the project.

CampaignToken

This is an ERC20 contract that manages the project-specific tokens used for campaigns.

CampaignNFT

This is an ERC721 contract that manages the non-fungible tokens for campaigns.

CrowdvouchedManager

This contract oversees the platform:

1. **Suspend/Resume Campaigns**: Temporarily halt or restart a campaign in case of issues or violations.
2. **Set Platform-Wide Policies**: Define general rules for the platform.
3. **Crowdsourcer Management**: Handle global restrictions or bans on crowdsourcers.
4. **Platform Maintenance**: Manage platform-wide upgrades, emergency pauses, and contract maintenance.
5. **Platform Fee Management**: Control the collection and distribution of platform-wide fees.

GlobalCrowdsourcerRatings

Aggregates and tracks crowdsourcer ratings across multiple campaigns.

Tokenomics

Crowdvouched's tokenomics structure is designed to incentivize participation, ensure project sustainability, and align the interests of contributors with the long-term success of the platform. The token system consists of two types of tokens: the platform-wide VOUCH token and project-specific ERC20 tokens. Together, these tokens create a dynamic ecosystem that rewards contributors and funds campaigns.

VOUCH Token

The VOUCH token is the governance and utility token for the Crowdvouched platform. Here's how VOUCH supports the platform's ecosystem:

- **Governance**: Holders of VOUCH tokens participate in the governance of Crowdvouched, helping decide on platform-wide and project-specific proposals. This includes setting campaign staking fees, disabling campaigns, campaign suspension and resumption, and malicious crowdsourcer banning. If a campaign is deemed inappropriate or possibly legally dubious, token holders can vote to disable the campaign. Also, if an active campaign gets stuck with unvalidated data records and it cannot be completed, token holders can vote to take over campaign management from the current owner.

They can also choose to liquidate the campaign, allowing project token holders to redeem their tokens. If a crowdsourcer is found to be acting maliciously, such as intentionally submitting invalid data or attempting to coordinate malicious behavior with other crowdsourcers, they can be permanently banned from the platform.

- **Campaign Staking**: Campaign creators must stake VOUCH tokens to launch a new campaign. This stake is returned to them upon successful completion of the campaign, but if the campaign fails to reach its goals or is abandoned, the stake is forfeited. This mechanism ensures that campaign creators are committed to seeing their projects through to completion.
- **Crowdsourcer Staking**: Crowdsourcers are required to stake VOUCH tokens to participate in campaigns. This mechanism ensures that contributors are committed to providing high-quality data.
- **Yield Sharing**: VOUCH token holders benefit from a portion of the yield generated by the campaign treasuries. Ten percent of the combined yield is allocated to staked VOUCH tokens.

By staking, governing, and earning yield, the VOUCH token plays a multi-functional role, incentivizing active participation and aligning the interests of all stakeholders on the platform.

Project-Specific Tokens

One of the distinguishing features of Crowdvouched is its innovative use of project-specific ERC20 tokens. Each project on the platform is linked to its own unique token, which plays a critical role in incentivizing participation and driving the economic model of the project.

Token Creation and Minting. When a new project is launched on Crowdvouched, a project-specific ERC20 token is created. These tokens are unique to each project and are created as the project progresses. The total supply of these tokens is not predetermined but rather dynamically generated based on the progress of the project.

Tokens are minted each time a data record is validated through the platform's decentralized crowdsourcing and validation process. Specifically, when two crowdsourcers independently submit matching data records for a given task, the data is considered validated, and one token is minted for each correct submission. As a result, both crowdsourcers involved in the validation process receive one newly minted token as a reward.

The value of project-specific tokens is tied to the project's treasury, which is funded through donations, NFT sales, and other contributions. Once a project is completed, token holders can redeem their tokens for a proportionate share of the treasury. This redemption process provides a tangible value to the tokens, ensuring that contributors are compensated for their efforts.

Deriving Token Value. The value of project-specific tokens is derived from the project's treasury, which grows over time through various funding mechanisms and yield generation strategies.

1. **Treasury Growth**: As the project progresses, its treasury accumulates funds through donations from individuals and organizations interested in the data being gathered, as well as through the sale of NFTs linked to the data records. To maximize the value of the treasury, the funds are automatically deposited into a DeFi platform to earn yield. This strategy ensures that the treasury continuously grows over time, enhancing the value of the project-specific tokens. The yield generated from these DeFi investments is reinvested into the treasury, further increasing the potential returns for token holders.
2. **Immediate Trading**: Project-specific tokens can be traded immediately after they are minted, providing instant liquidity to crowdsourcers. This feature allows participants to capitalize on their contributions right away, either by holding the tokens as a long-term investment or by trading them on secondary markets. The ability to trade tokens instantly adds flexibility and can attract participants looking for more immediate financial rewards.
3. **Redemption and Burning**: While tokens can be traded at any time, they can only be redeemed once the project is officially completed. Upon project completion, token holders can redeem their tokens for a proportionate share of the project's treasury. After a token is redeemed, it is subsequently burned. This burning mechanism ensures that the token supply decreases over time.
4. **Post-Completion Trading**: After a project is completed and tokens can be redeemed, project-specific tokens can continue to hold value in secondary markets. The treasury, which backs these tokens, can grow not only through ongoing yield from DeFi investments but also from retroactive contributions and NFT royalty sales. Organizations or companies that benefit from the data collected may choose to make retroactive contributions to the treasury. Additionally, NFTs linked to the project can include royalty clauses, where a percentage of each subsequent sale is directed back to the treasury. This potential for continued growth ensures that the value of the tokens can increase

even after the project's primary objectives have been met. Token holders may choose to trade these tokens, particularly if the project gains historical or cultural significance, adding a speculative aspect to token ownership.

In summary, project-specific tokens on Crowdvouched serve as a crucial mechanism for rewarding participation, ensuring data quality, and tying the economic value of the project to the efforts of its contributors. By linking these tokens to a growing treasury, enhanced by DeFi yield generation and retroactive contributions, and allowing for their immediate trading and eventual redemption and burning, Crowdvouched creates a robust and dynamic token economy that aligns the interests of all participants.

Use Case: The 1850 U.S. Census

Crowdvouched's inaugural project will be the digitization of the 1850 U.S. Census. This project highlights the platform's ability to harness decentralized crowdsourcing to digitize historical records accurately and efficiently.

Background

The 1850 U.S. Census contains crucial demographic data from a pivotal time in American history, documenting the population just before the Civil War. While the census has been digitized by a few genealogy companies, it is not easily accessible to the public. Current access is limited to basic searches through proprietary platforms, often requiring users to log in. There is no API access for more complex queries or large-scale analysis. Crowdvouched offers a solution by decentralizing the digitization process, making the data permanently accessible and open to anyone. Through Crowdvouched, the census is broken down into individual data records, which are distributed to a global community of crowdsourcers for verification and validation.

1. Campaign Creation

The campaign creator initiates the campaign by providing key details:

- Campaign Name: "1850 U.S. Census"
- Token Name: "USC1850"

Next, they define the Locator Data Field Names—state, county, page, and line—representing the minimum information a crowdsourcer needs to locate a specific census record.

The creator also defines the Data Record Field Names, which are the actual fields in the census that the crowdsourcer needs to extract. For the 1850 Census, these fields include:

- first name
- last name
- age
- occupation
- birthplace

After defining these fields, the campaign creator prepares the Locator Data, which looks is in JSON format:

```
{
  "state": "Minnesota",
  "county": "Benton",
  "page": "1A",
  "line": "1"
}
```

There is a piece of Locator Data for every line of the census. Each crowdsourcer will receive one of these when they request a data record to solve. This Locator Data is uploaded to Arweave in an NFT format, which is sequential to ensure each record has a unique identifier.

The Campaign Contract is then deployed, and the Arweave transaction ID is stored on-chain, linking the on-chain contract to the off-chain locator data.

2. Treasury Funding

Once the campaign is created, supporters can send ETH to the campaign's treasury. The treasury is deposited into a DeFi protocol to earn yield, ensuring that the campaign's funds grow over time.

3. Crowdsourcer Receives Locator Data

A crowdsourcer requests Locator Data through the Farcaster Frame. The data they receive may look like this:

```
{
  "state": "Minnesota",
  "county": "Washington",
  "page": "71B",
  "line": "29"
}
```

Using this Locator Data, the crowdsourcer finds the corresponding record in the census. They then enter the relevant details into the frame, such as:

```
{
  "last name": "Gleason",
  "first name": "Samuel",
  "age": "26",
  "sex": "M",
  "occupation": "Lumberman",
  "birthplace": "Ohio"
}
```

The Farcaster Frame guides the crowdsourcer with input fields for each data point, ensuring that they enter the information accurately.

4. Data Submission

Once all fields are entered, the crowdsourcer clicks Submit. The data is sent to the Crowdvouched platform, where it is temporarily stored and compared against other submissions for the same record.

If the crowdsourcer is the first to submit data for this record, it remains in the system for validation by a second crowdsourcer.

5. Validation Process

A second crowdsourcer is assigned the same Locator Data and follows the same steps, independently submitting data for the same individual.

Once two crowdsourcers submit identical data for the same record, the data is considered validated. The validated record is then written permanently to Arweave, ensuring it is stored securely and transparently.

6. Rewarding Crowdsourcers

Both crowdsourcers involved in validating the record are rewarded with USC1850 tokens. These tokens are minted upon successful validation and serve as rewards for their contributions.

- USC1850 tokens can be traded immediately after minting, adding liquidity and value to the crowdsourcers' efforts.
- Token Redemption: Once the campaign is completed, crowdsourcers can redeem their USC1850 tokens for a share of the campaign treasury.

7. Campaign Completion

The 1850 Census campaign continues until all records have been digitized and validated. Once the entire dataset is complete, crowdsourcers can redeem their USC1850 tokens for a portion of the treasury, which has grown through donations, contributions, and interest from the DeFi investments.

Additionally, all validated data records can be minted as NFTs. The minting fee for these NFTs goes directly into the treasury, further increasing its value.