OCT 11, 2024

Community-Based Environmental Justice

Shareen Chang, Jason Gao, Madison Steinau, Xinxuyang Zhao

link: https://www.youtube.com/watch?v=p_yQkNNWd6s&ab_channel=shareenchang

Team CCCC

EXECUTIVE SUMMARY

Residents without sufficient data to present to regulatory agencies struggle to change the environmental standards and improve community health.

Connecting with researchers quickly and empathetically can bridge this gap and foster a wider community of informed and engaged residents.

PROBLEM STATEMENT

How can we best foster relationships between residents facing environmental injustice and researchers to improve community well-being?

Executive Summary

→ Requirements Gathering

Design Requirements

Ideation

Parting thoughts

REQUIREMENTS GATHERING

Research Methods

①

Social Media Mining

Looked into the posts in the “Stop Sterigenics” Facebook group that has 1.9K followers to analyze attitudes and processes.

②

Field Research

Attended a community meeting on environmental and health concerns about a local landfill and spoke to participants.

③

Semi-structured Interviews

Spoke with community leaders, residents, and a scientist on current strategies and situations.

Social Media Mining

Stop Sterigenics Facebook Group, a fenceline community facing dangerous Ethylene Oxide (EtO) emissions from a neighboring medical sterilization facility.

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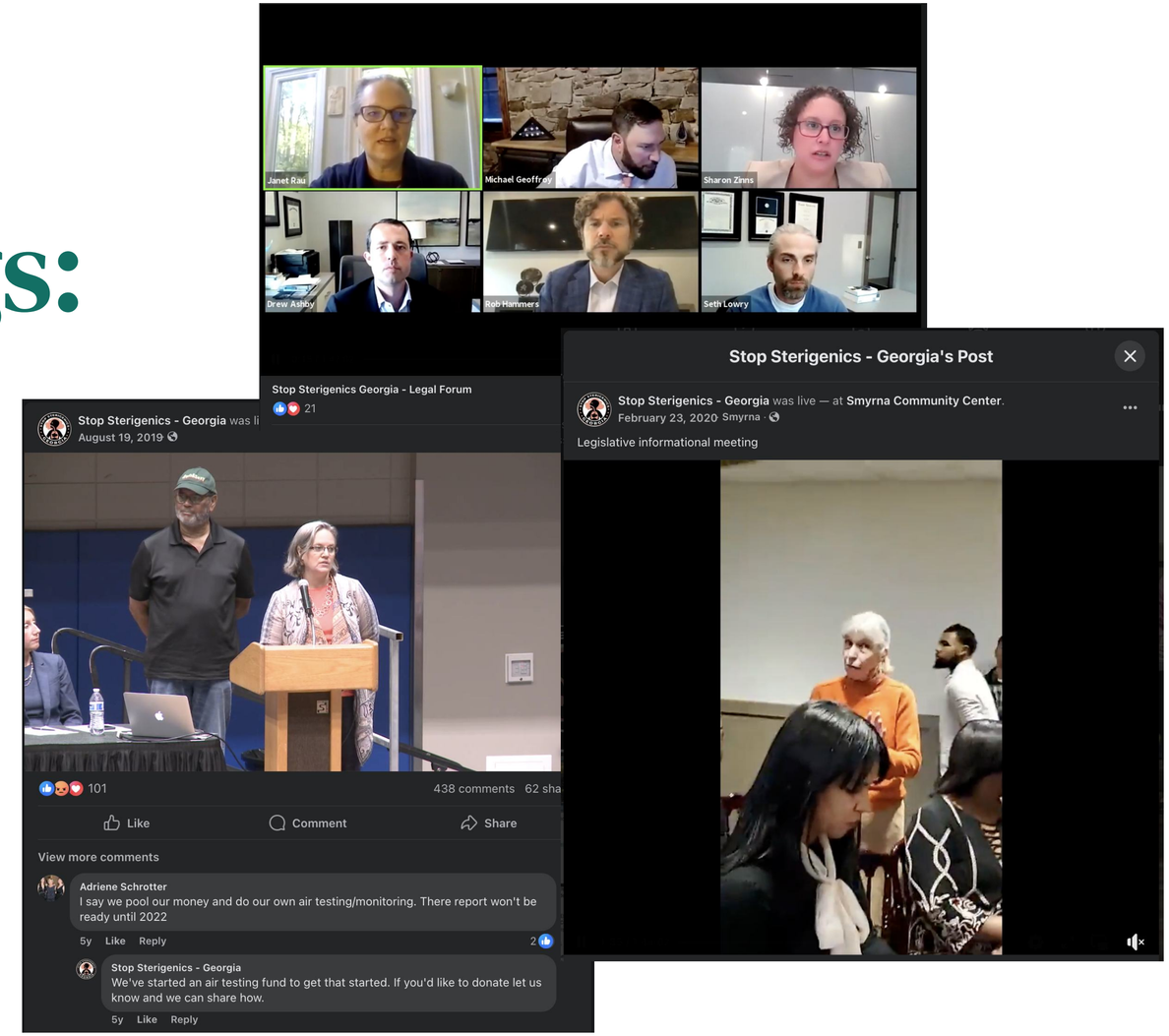
REQUIREMENTS GATHERING | SOCIAL MEDIA MINING

In-person and virtual informational meetings:

- Keeping the community updated and connected with legal and government experts.
- Recordings are posted again on the group for others that cannot make the meeting to catch up on information.
- Allow for further discussion in the chat about the topic and let users share the video with their connections

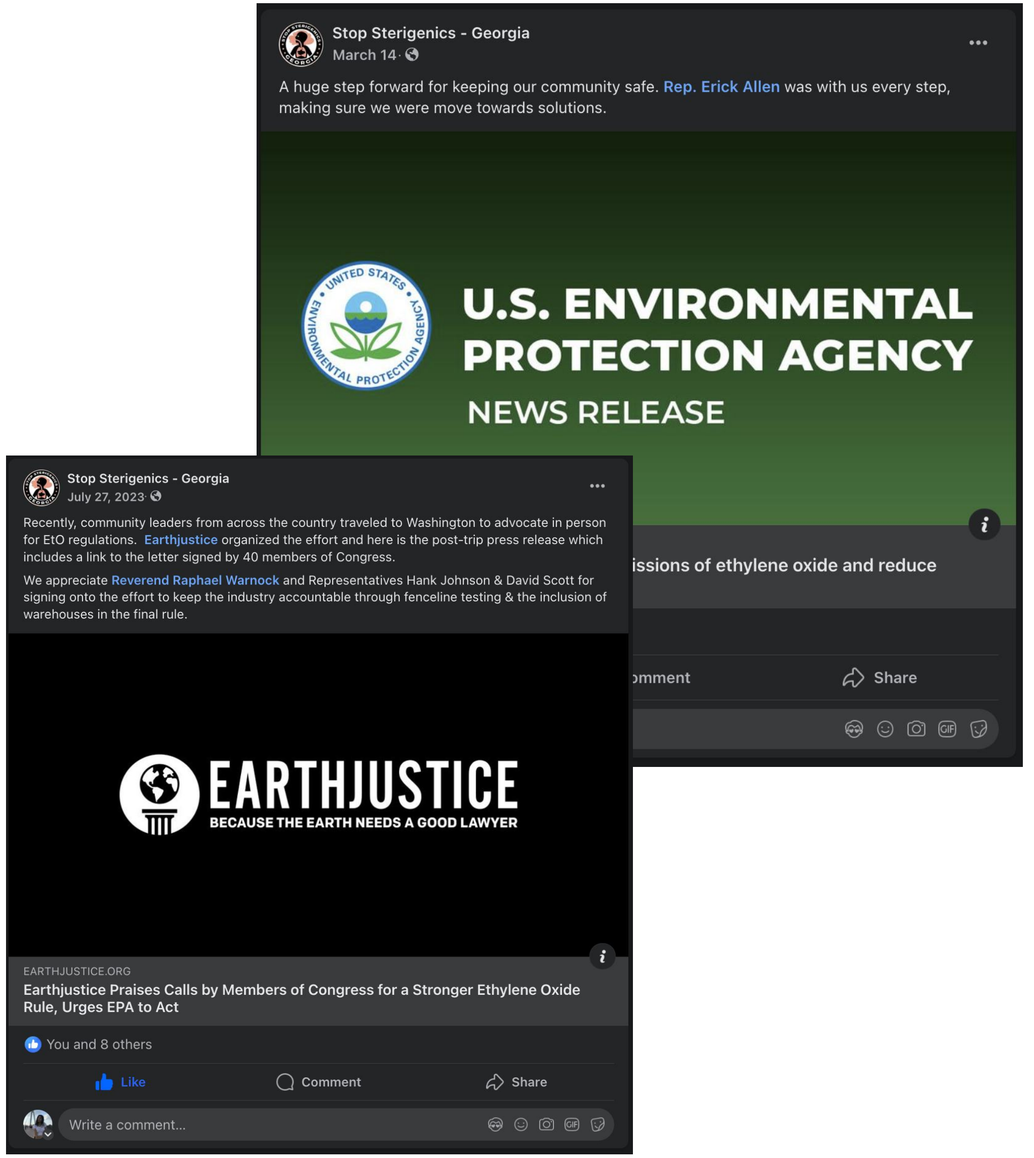


REQUIREMENTS GATHERING | SOCIAL MEDIA MINING

Updates on community efforts with government organizations

- Often tag and shouts out the person/organization that is involved and helping the Stop Sterigenics community.

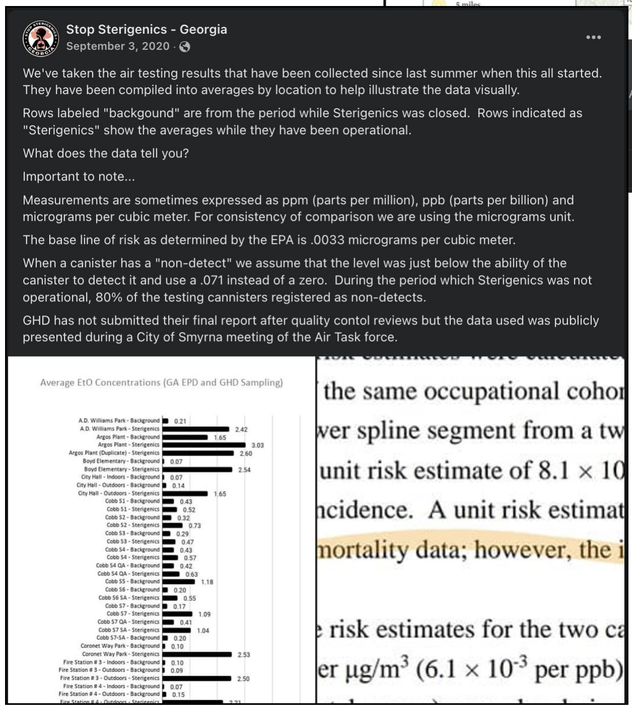
- Highlight the progress that is being made for the community along with a link for users to read more into the topic.

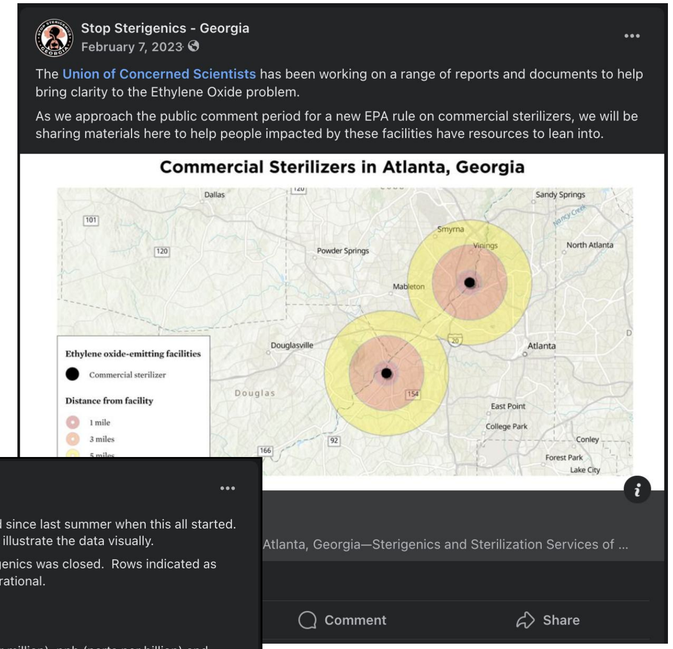


REQUIREMENTS GATHERING | SOCIAL MEDIA MINING

Reports to bring clarity on the issue

The FB group posts important reports and documents about EtO and an explanation on what the document is about since scientific reports can be difficult to read and understand for the general public



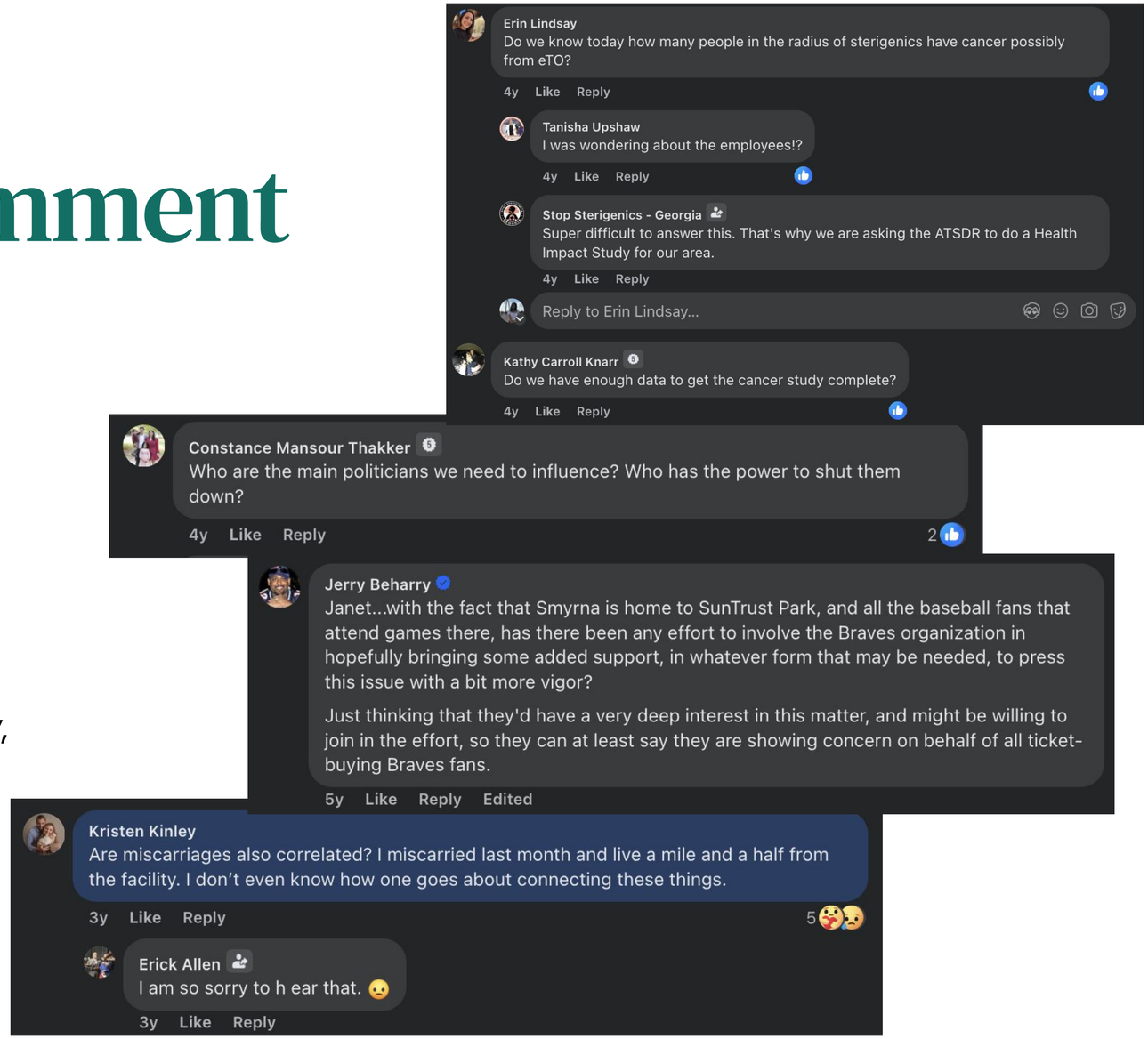


REQUIREMENTS GATHERING | SOCIAL MEDIA MINING

Discussion in the comment section

- Members use the comment section of FB posts to ask about confusions and concerns where other members could answer or offer support

- The comment section can also show the general sentiment on the posts whether residents are angry, concerned, and/or hopeful about a post



Field Research

Participant observation in a community informational session at a local church, regarding the remediation and construction on a local illegal landfill.

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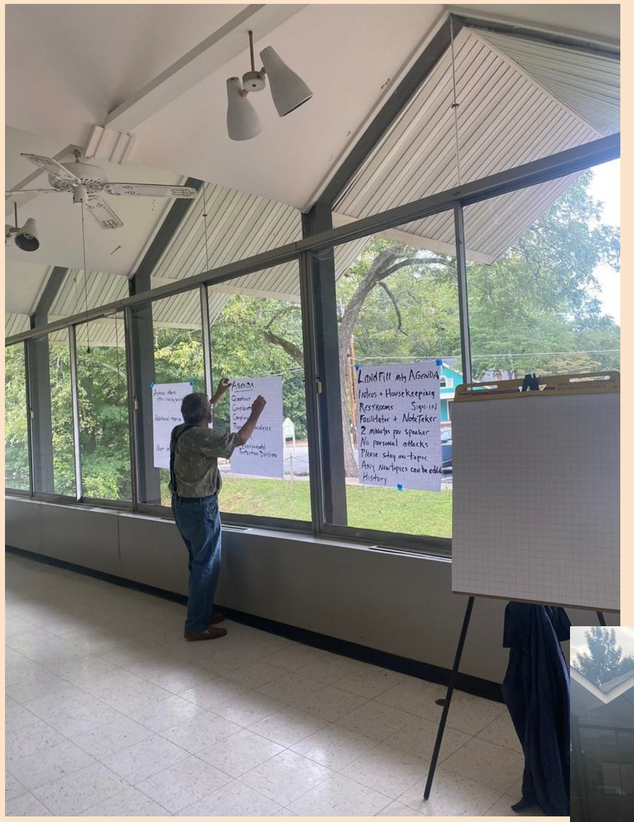
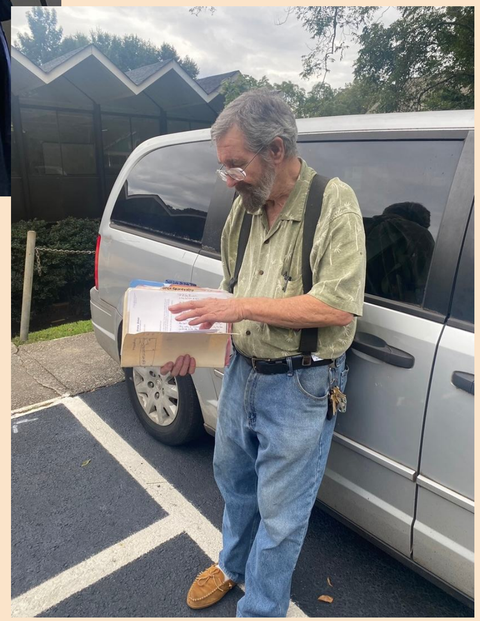
REQUIREMENTS GATHERING

Field Research in Community Townhall Meeting

- Information and environmental concerns regarding the remediation of and construction upon a local illegal landfill, which was raising particulate matter into the air.
- We observed the meeting and afterwards interviewed and spoke with the organizer and various residents.



Meeting agenda and discussion written out for residents to see.



Organizer keeps important documents in manila folder.

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Semi-structured Interviews

Virtual meetings with the organizer of the EtO Facebook group and an Emory researcher investigating soil pollution in Atlanta's Westside.

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REQUIREMENTS GATHERING

Interviewees

① Emory Researcher

Expert in air pollution and lead contamination cleanup in Atlanta.

② Grassroots Organization Leader

Community leader fighting ethylene oxide (EtO) exposure in local area.

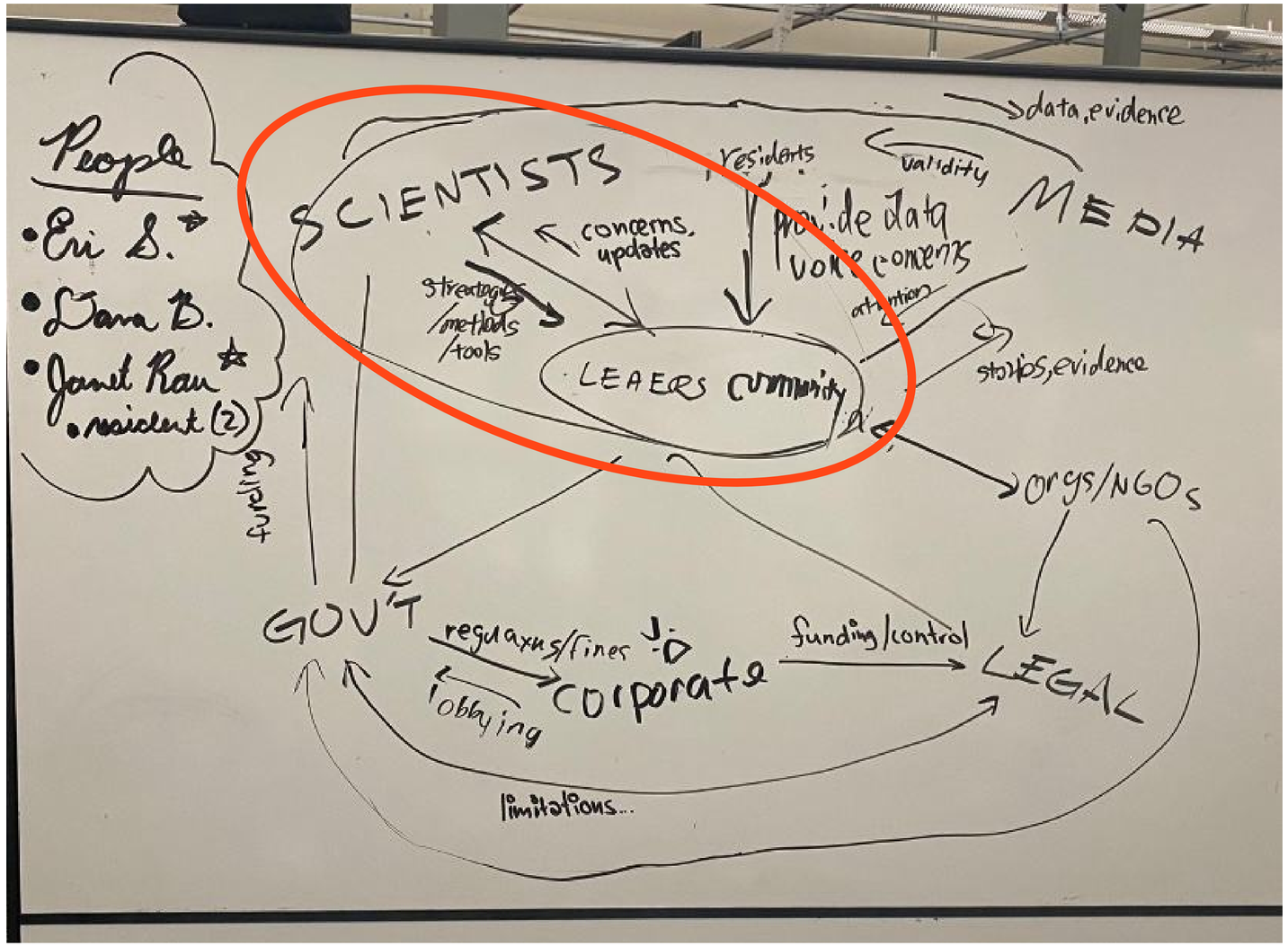
③ Multiple Community Residents

Residents concerned about landfill remediation and construction in the neighborhood.

How can we foster relationships between fenceline communities (residents and leaders) and scientific researchers to alleviate environmental risks in sacrifice zones?	How can scientific research and data collection spur government or regulatory action?	What types of data have you found most compelling when presenting to policymakers or regulatory agencies?	
		Are there certain types of research/methods you find spur action from government more quickly than others?	
	How do fenceline communities interact with scientific experts?	What specific communities are you currently working with, and what environmental issues are they facing?	
		What are the biggest challenges you face in collecting and utilizing environmental data to drive change within communities wrestling with toxicant exposure	
		What successful examples have you seen where data collection led to tangible improvements in a sacrifice zone's environment or community well-being?	
		How do you involve community members in the data collection process, and what barriers have you encountered?	Researcher
		How do scientists and community members meet to discuss the results and implications of research and data collection?	Researcher, residents
		How do you navigate ethical considerations working with fenceline communities, considering they are likely more vulnerable populations?	
		What type of research is being done? (data collection, analysis, etc.) Who is doing it? (residents, researchers). And in what part of the process can residents best fit into?	
	What type of direct impacts does scientific research have on fenceline communities, both short and long-term?	What are some obstacles to intensifying/perpetuating (struggling for the right word) the positive impact long term?	
		What is being done to alleviate risks and dangers of exposure in the immediate short-term/day to day?	Researcher, residents
		What role do community members and leaders play in shaping research priorities for short term goals in mitigating immediate dangers?	
	How can we improve the visibility of environmental research findings?	How do you collaborate with media to amplify the reach of your research findings? What challenges have you encountered?	Researcher
		How has this experience changed your perspective on environmental regulation and corporate responsibility?	Resident
		What strategies have you used to make your research findings more accessible and understandable to affected residents and general public?	Researcher
	How to enhance the organization within the fenceline communities?	What challenges did you face in organizing the community around this cause?	Resident
		How have you worked with local government officials to address concerns about Sterigenics?	Resident
		How do you motivate and organize residents to believe in their political power and actively engage in civic processes to address environmental concerns?	Community leader

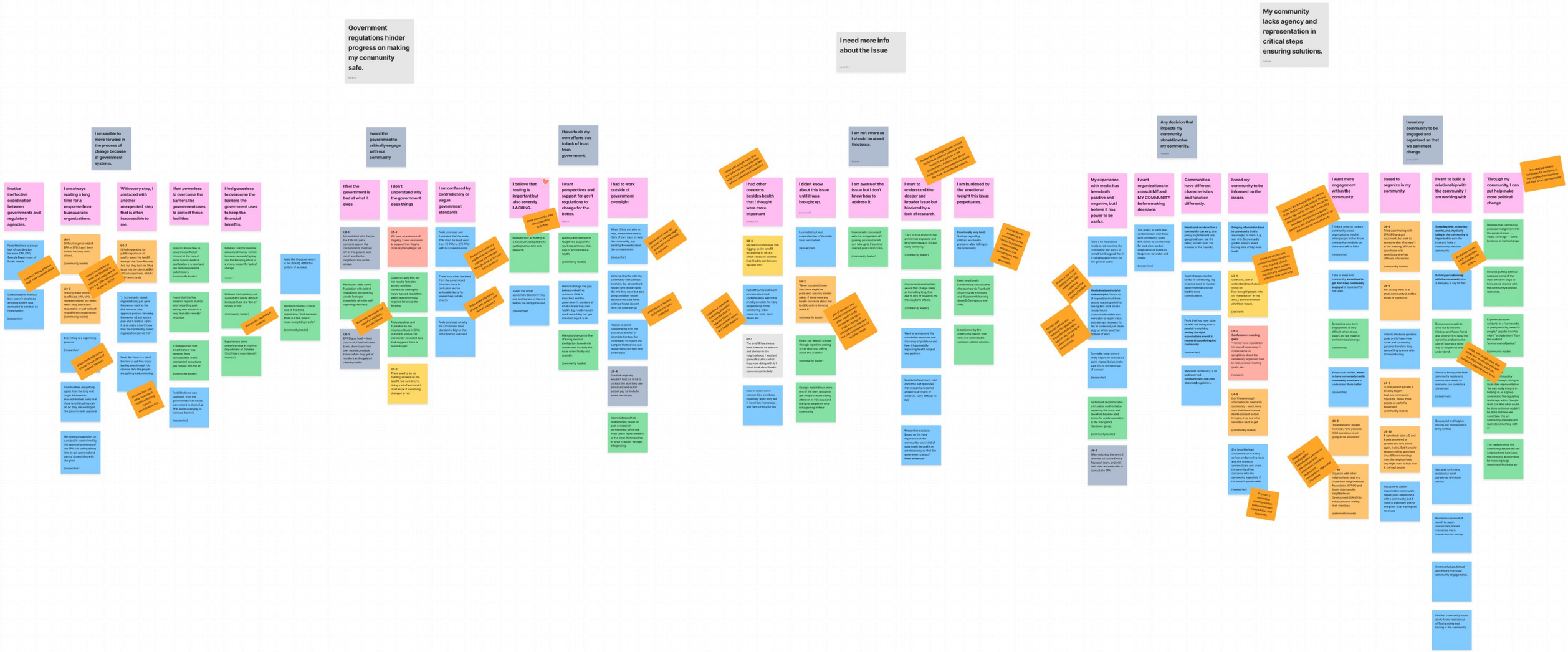
Interview Guide

Research and interview questions, rationale, and target users.



Stakeholder Map

We're specifically focusing on the relationship between **residents and scientists.**



Affinity Mapping

Data Analysis

Research Findings

Our analysis of the data we collected.

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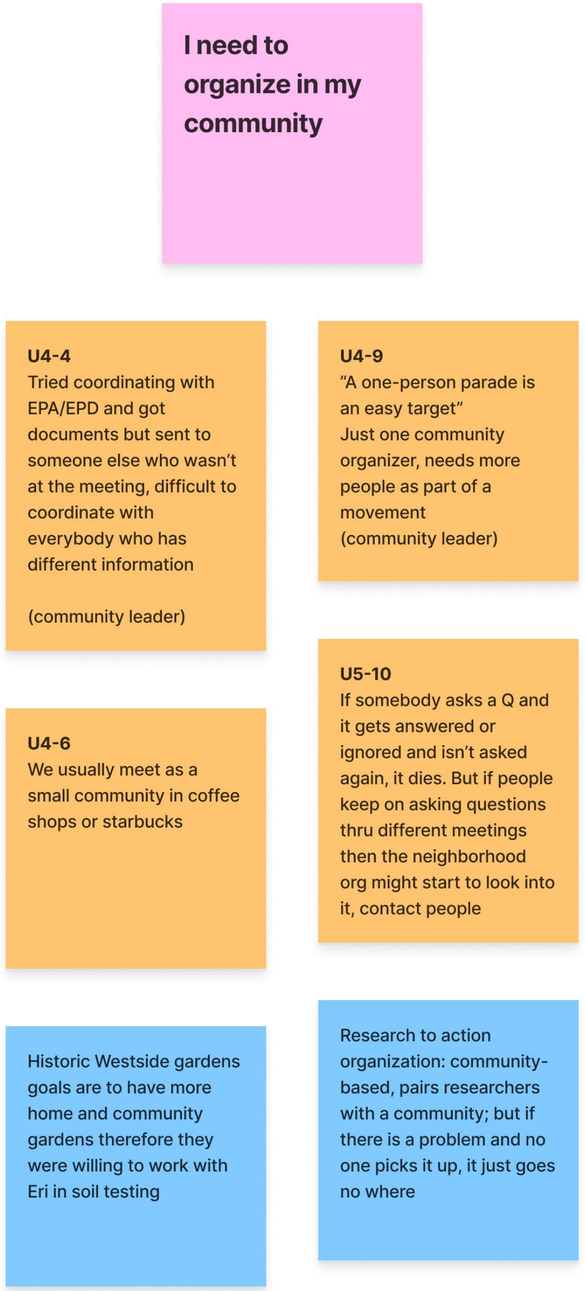

RESEARCH FINDING #1

Internal community organization is key for effective external outreach.

Strong community organization is essential for establishing lasting and impactful collaborations with external partners to address environmental issues effectively.

"I didn't know the purpose of the meeting today, and I thought there were updates from the government." – Resident at landfill meeting

RESEARCH FINDING #2

Transparent information increases community engagement and empowerment.

- Limited health data leaves community leaders **unprepared** to engage, raise awareness, and address concerns.
- **Lack of concrete evidence** about wrongdoings by polluting facilities hinders communities from effectively reporting concerns to regulatory agencies.
- In-time information sharing on reports of pollutants with highlighted key points helps keep communities informed.

"We don't have any evidence to suspect that [industrial facilities] have done anything illegal." - Resident at landfill meeting

RESEARCH FINDING #3

Affected communities value representation throughout relevant decision-making processes.

- Collaboration with elected officials empowers communities to navigate regulatory landscapes and effectively translate their concerns into legislative action for environmental justice.

- Regulatory agencies should create platforms for impacted residents to voice their concerns and participate in shaping environmental regulations.

"A state representative was instrumental in helping us understand regulatory agencies and passing legislation regarding regulation of emissions of EtO." – Community leader

RESEARCH FINDING #4

Direct engagement is essential to successfully collect data and gain a deeper understanding of the issues.

- Researchers build trust and show their care towards affected residents by immersing themselves in the community.

- Understanding the community's comfort, trust, and familiarity with environmental exposure testing is essential for data collections.

"We encountered resistance to needle-based testing due to past community experiences. To overcome this, we engaged with churches and schools, who suggested arm-based testing as an alternative." - Researcher

RESEARCH FINDING #5

Collaborating thoughtfully with media raises awareness.

- Involving the media was crucial for raising awareness about the issues and encouraging people to question government policies.

- Media coverage has raised awareness among others outside the community, but not necessarily among the target residents the researchers want to recruit for sampling.

"Having the media involved has been our number one way of getting the news out and having people to think about regulations from the government." – Community leader

RESEARCH FINDING #6

Communities feel hopeless and experience enormous barriers to address environmental risks.

- Communities lack resources and funding to address environmental hazards, often receiving inadequate solutions that do not effectively resolve the issues.

- The gap between community needs and effective governmental regulations, coupled with limited researcher engagement, impedes the development of solutions that truly protect public health.

"We reached out to Emory to try to get some research around EtO itself, and we had a lot of doors shut in our face because EtO is used within the medical community" – Community leader

RESEARCH FINDING #7

Residents struggle to understand scientific, industry, or governmental reports on environmental issues.

- Reports from industry, government, and scientific studies frequently use complex language, which residents find challenging to interpret and understand fully.

"EPA did a longitudinal study on EtO and there's a lot of information we don't understand." – Community leader

Hierarchical Task Analysis

Understanding residents' and researchers' decision process.

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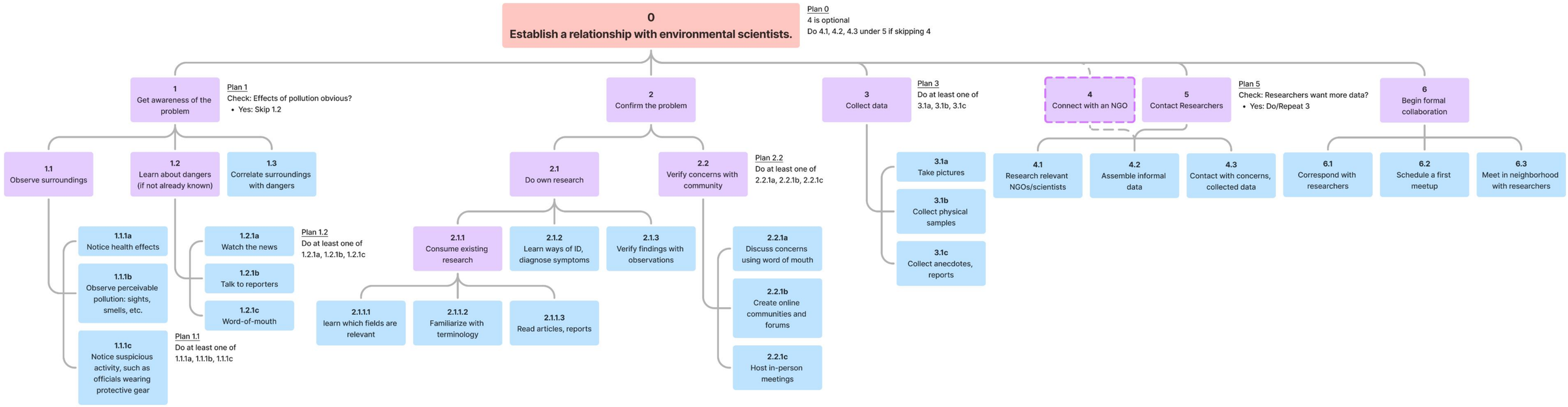
REQUIREMENTS GATHERING | TASK ANALYSIS 1

How do residents establish an initial connection and relationship with researchers?

When left to their own accord, industry facilities skip safety measures to maximize profits. Government regulations are non-negotiable in keeping them accountable. To investigate facilities and pass strict regulations protecting community health, residents need **concrete scientific evidence** of wrongdoing from facilities, linking emissions to the health effects.

Residents must identify the problem, collect data, and use this to recruit and collaborate with researchers.


0
Establish a relationship with environmental scientists.
Plan 0
4 is optional
Do 4.1, 4.2, 4.3 under 5 if skipping 4
1
Get awareness of the problem
Plan 1
Check: Effects of pollution obvious?
Yes: Skip 1.2
2
Confirm the problem
3
Collect data
Plan 3
Do at least one of 3.1a, 3.1b, 3.1c
4
Connect with an NGO
5
Contact Researchers
Plan 5
Check: Researchers want more data?
Yes: Do/Repeat 3
6
Begin formal collaboration
1.1
Observe surroundings
1.2
Learn about dangers (if not already known)
1.3
Correlate surroundings with dangers
1.1.1a
Notice health effects
1.1.1b
Observe perceivable pollution: sights, smells, etc.
1.1.1c
Notice suspicious activity, such as officials wearing protective gear
Plan 1.1
Do at least one of 1.1.1a, 1.1.1b, 1.1.1c
1.2.1a
Watch the news
1.2.1b
Talk to reporters
1.2.1c
Word-of-mouth
Plan 1.2
Do at least one of 1.2.1a, 1.2.1b, 1.2.1c
2.1
Do own research
2.2
Verify concerns with community
Plan 2.2
Do at least one of 2.2.1a, 2.2.1b, 2.2.1c
2.1.1
Consume existing research
2.1.2
Learn ways of ID, diagnose symptoms
2.1.3
Verify findings with observations
2.1.1.1
learn which fields are relevant
2.1.1.2
Familiarize with terminology
2.1.1.3
Read articles, reports
2.2.1a
Discuss concerns using word of mouth
2.2.1b
Create online communities and forums
2.2.1c
Host in-person meetings
3.1a
Take pictures
3.1b
Collect physical samples
3.1c
Collect anecdotes, reports
4.1
Research relevant NGOs/scientists
4.2
Assemble informal data
4.3
Contact with concerns, collected data
6.1
Correspond with researchers
6.2
Schedule a first meetup
6.3
Meet in neighborhood with researchers

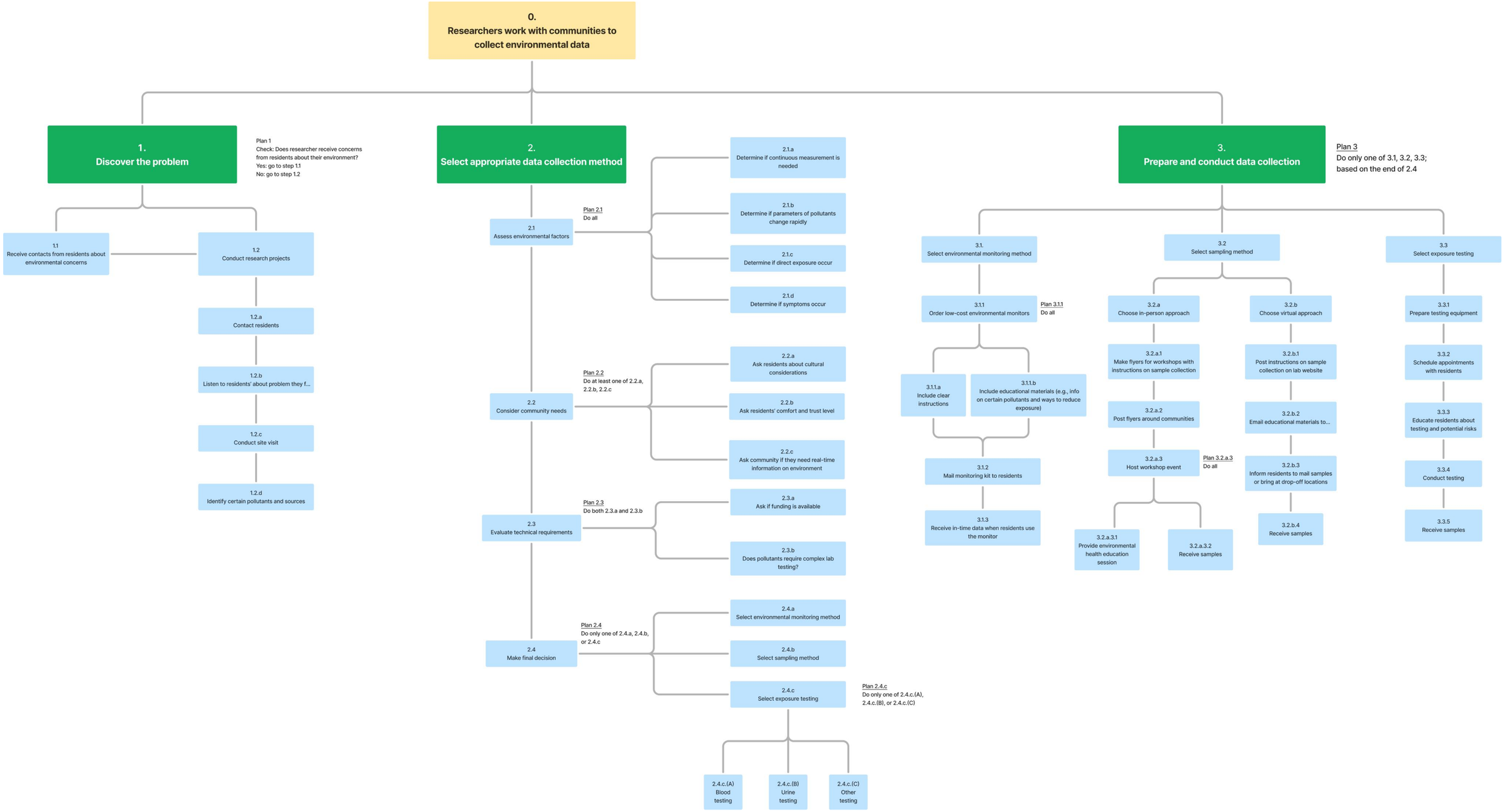
How do researchers work with residents to collect environmental data?

Regulatory action is slow and requires empirical evidence

Residents face immediate health risks from ongoing exposure

Researchers must:

- Build trust through empathetic understanding
- Select appropriate methods for data collection
- Work closely with communities to collect data


0.
Researchers work with communities to collect environmental data
1.
Discover the problem
Plan 1
Check: Does researcher receive concerns from residents about their environment?
Yes: go to step 1.1
No: go to step 1.2
1.1
Receive contacts from residents about environmental concerns
1.2
Conduct research projects
1.2.a
Contact residents
1.2.b
Listen to residents' about problem they f...
1.2.c
Conduct site visit
1.2.d
Identify certain pollutants and sources
2.
Select appropriate data collection method
2.1
Assess environmental factors
Plan 2.1
Do all
2.1.a
Determine if continuous measurement is needed
2.1.b
Determine if parameters of pollutants change rapidly
2.1.c
Determine if direct exposure occur
2.1.d
Determine if symptoms occur
2.2
Consider community needs
Plan 2.2
Do at least one of 2.2.a, 2.2.b, 2.2.c
2.2.a
Ask residents about cultural considerations
2.2.b
Ask residents' comfort and trust level
2.2.c
Ask community if they need real-time information on environment
2.3
Evaluate technical requirements
Plan 2.3
Do both 2.3.a and 2.3.b
2.3.a
Ask if funding is available
2.3.b
Does pollutants require complex lab testing?
2.4
Make final decision
Plan 2.4
Do only one of 2.4.a, 2.4.b, or 2.4.c
2.4.a
Select environmental monitoring method
2.4.b
Select sampling method
2.4.c
Select exposure testing
Plan 2.4.c
Do only one of 2.4.c.(A), 2.4.c.(B), or 2.4.c.(C)
2.4.c.(A)
Blood testing
2.4.c.(B)
Urine testing
2.4.c.(C)
Other testing
3.
Prepare and conduct data collection
Plan 3
Do only one of 3.1, 3.2, 3.3; based on the end of 2.4
3.1.
Select environmental monitoring method
3.1.1
Order low-cost environmental monitors
Plan 3.1.1
Do all
3.1.1.a
Include clear instructions
3.1.1.b
Include educational materials (e.g., info on certain pollutants and ways to reduce exposure)
3.1.2
Mail monitoring kit to residents
3.1.3
Receive in-time data when residents use the monitor
3.2
Select sampling method
3.2.a
Choose in-person approach
3.2.a.1
Make flyers for workshops with instructions on sample collection
3.2.a.2
Post flyers around communities
3.2.a.3
Host workshop event
Plan 3.2.a.3
Do all
3.2.a.3.1
Provide environmental health education session
3.2.a.3.2
Receive samples
3.2.b
Choose virtual approach
3.2.b.1
Post instructions on sample collection on lab website
3.2.b.2
Email educational materials to...
3.2.b.3
Inform residents to mail samples or bring at drop-off locations
3.2.b.4
Receive samples
3.3
Select exposure testing
3.3.1
Prepare testing equipment
3.3.2
Schedule appointments with residents
3.3.3
Educate residents about testing and potential risks
3.3.4
Conduct testing
3.3.5
Receive samples

Non-Functional Design Requirements

Characteristics and attributes of the system at large.

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NON-FUNCTIONAL DESIGN REQUIREMENT #1

The system should be well organized and hierarchical.

- Communities need to be internally organized before they can exert external pressure or effectively recruit external allies into a coalition. Ineffective internal organization can lead to frustrated, confused, and disinterested residents who will prioritize other concerns.

- Our system needs to enforce organization and hierarchy within a community to allow for smooth, efficient operation.

Based on Research Findings 1

NON-FUNCTIONAL DESIGN REQUIREMENT #2

The system should be transparent about processes.

- Design should show clear communication including **visualizations of the progress of any change**
- Design should consider feedback from researchers and residents for every change (specifically government, or things that affect residents).
- Providing communities with **accessible, timely, and easy-understanding data** about environmental issues to facilitate communities members in discussions and decision-making.

Based on Research Findings 2, 7

NON-FUNCTIONAL DESIGN REQUIREMENT #3

Design should be easy to use and accessible by anyone regardless of scientific literacy.

- Most residents of fenceline communities may lack expertise in government regulation, environmental law, or toxicology, thus our system should explain reports in an easy understandable ways.

- As most residents have limited time and energy due to various socioeconomic factors, it should explain concepts clearly and allow for quick, effortless interactions.

- The interface should minimize cognitive and physical load while effectively conveying complex information.

Based on Research Findings 7

Functional Design Requirements

Key functionality and features that systems should include.

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FUNCTIONAL DESIGN REQUIREMENT #1

The system should make the dangers of environmental contaminants understandable and relevant to the community.

- Residents often report not knowing the extent or the exact dangers of the pollutants they are exposed to, especially when polluting plants often lie about their level of danger, leading them to prioritize other concerns which are more visible or obvious.

- Our system should make it abundantly clear how and to what extent pollutants impact residents' lives, allowing them to more effectively organize around the issue and protect themselves.

Based on Research Findings 2, 7

FUNCTIONAL DESIGN REQUIREMENT #2

Design should suggest concrete and actionable items to community members specific to the community.

- Residents report confusion and frustration navigating governmental systems. Lack of understanding as to how best to proceed in the bureaucratic process leads to directionless community meetings, annoyed community members, and dwindling of support.

- Our system should offer exact items residents can take, giving them direction and empowering them to help themselves.

- With every barrier, the design should present relevant stakeholders (contact info) + actionable steps to help overcome the obstacle.

- The design should empower residents by giving them the resources, knowledge, and tools to advocate for themselves.

Based on Research Findings 3, 6

FUNCTIONAL DESIGN REQUIREMENT #3

Design should enable researchers to develop an intimate and empathetic understanding of communities.

- Researchers who study and diagnose communities without fully understanding the community's requirements and situation can be more damaging than helpful

- Residents can often become fatigued and frustrated when they are studied but not actually listened to; this also makes it more difficult for researchers when residents do not trust them, making cooperation and collaboration more difficult.

- Our system must foster a real understanding of communities within scientific experts so that they may tailor their work to community needs, culture, and sensitivities.

Based on Research Findings 3, 4

FUNCTIONAL DESIGN REQUIREMENT #4

Design should provide a safe and open environment for active discussion inclusive of all community members.

- Community members find it easier to mobilize, incite change, and put pressure on external stakeholders such as government and industry bodies when there are more voices of concern.
- In order to build a larger community, more people need to be engaged in the conversation.
- Our system should let all community members be heard and should actively encourage discussion and dissemination of information among residents to build power and a large base of concern.

Based on Research Findings 2, 3, 4, 5

DIVERSITY AND ACCESSIBILITY DESIGN REQUIREMENTS

FR3 **Design should enable researchers to develop an intimate and empathetic understanding of communities.**

NFR3 **Design should be easy to use and accessible by anyone regardless of scientific literacy.**

DESIGN REQUIREMENTS

Measurement of Successful Implementation

1. **Resident Knowledge and Engagement:**
- Ability to enumerate pollutant effects on community health (Survey, Interview)
- Understanding of roles and actions in data collection/remediation process (Contextual Inquiry, Interview, Survey)
- Awareness of community-wide efforts and individual roles (Survey)

2. **Trust and Collaboration:**
- Resident trust in scientists and willingness to cooperate (Survey, Interview, Contextual Inquiry)
- Quality and quantity of resident contributions to discussions (System Usage Data)

3. **System Usability and Progress Tracking:**
- Cognitive and physical load metrics (Usability Test)
- User feedback on stress levels and ease of use (Survey)
- Time required for key tasks (Usability Test)
- Ability to report ongoing steps, progress, and blockers (Survey)

4. **Platform Effectiveness:**
- Residents' ability to define relevant terms (Survey)
- Reported psychological safety when using the platform (Survey)

10 Design Ideas

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DESIGN IDEAS

Ideation Process

①

Affinity Notes

Generate quick design ideas based off of pain points from affinity notes and fleshed them out with more requirements later.

②

SCAMPER

Iterate and alter existing systems to fit requirements.

③

Collaborative Iteration

Collaboratively identified weaknesses and strengths of identical designs and combined or altered similar ideas.

DESIGN IDEA #1

Community Data Collection

A community platform that functions as a database and an application for sharing information and experiences among members.

- An anonymous reporting feature allows residents to submit pollution or contamination reports, which are then verified by scientists.
- Scientists provide timely updates on air or soil pollutants, labeling reported data and offering guidance on mitigating harmful effects.
- Facilitates collaboration between residents and scientists through data sharing, including photo and video uploads, and features a heat map to display areas with high pollutant reports and associated risk levels.

Based on NFR1, NFR3, FR1, FR3, FR4

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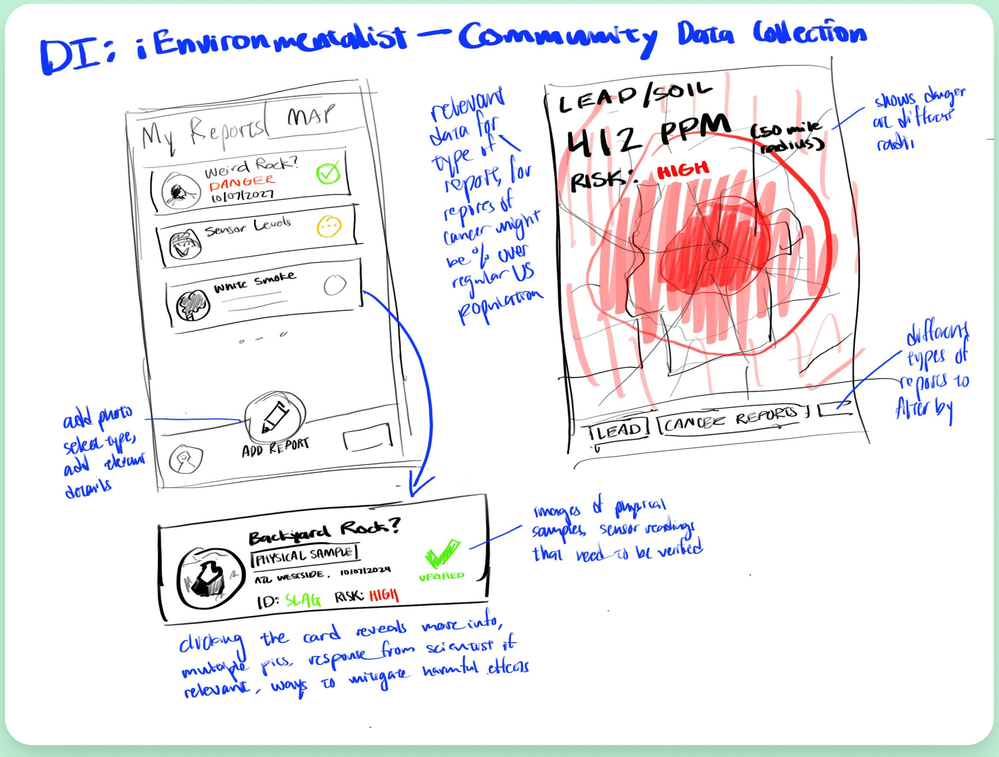

DESIGN IDEA #2

Pair With a Researcher

A platform that allows residents from a neighborhood to select a specific pollutant/toxin that is affecting their community.

- The system will then find researchers that are working in the domain. Users can then select the researchers that they would like to contact and the platform directly writes an email to contact the researcher the user is interested in working with.
- This solution connects residents to researchers to work on improving resident's community.

Based on NFR 3, FR 3

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DESIGN IDEA #3

Volunteer in Communities

A dashboard allowing volunteers to see urgent volunteering needs and events.

- Visual representation of an event to help understand event for varying literacy levels.
- Large RSVP/check boxes and headers for increased visibility.
- Enable community-based data collection.
- Promote experience sharing through in-person meetings and feedback sessions at volunteer events.
- Allow volunteers with different abilities and time commitments to contribute to distinct roles.

Based on NFR 1, FR 2

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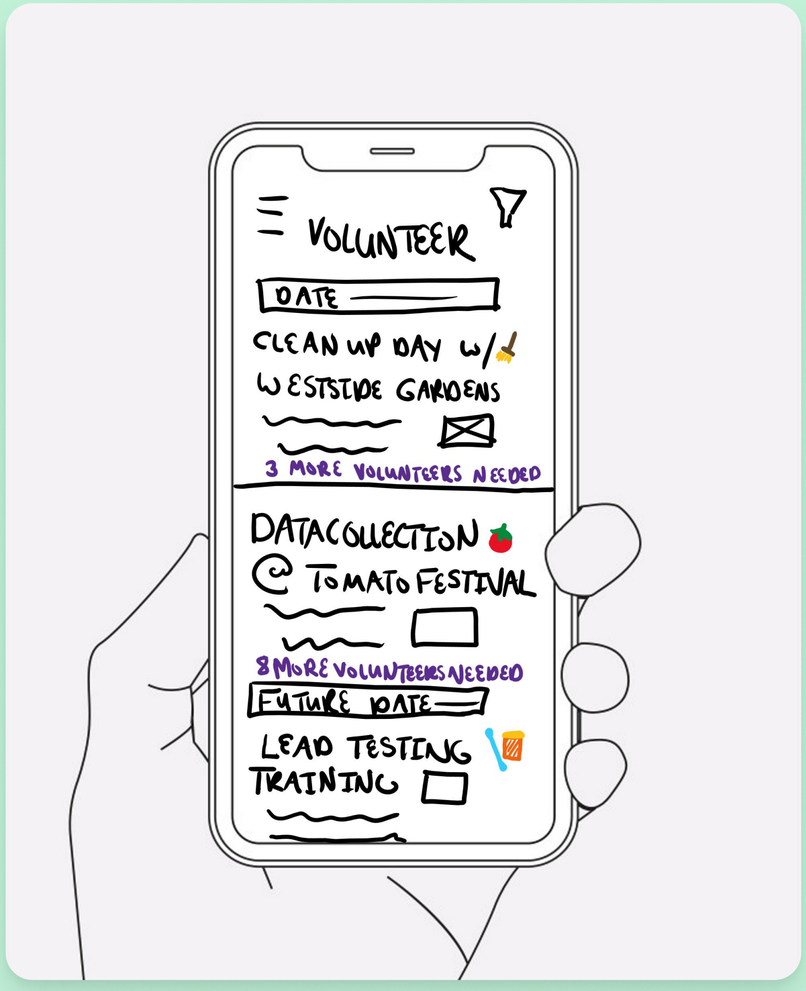

DESIGN IDEA #4

Aggregated Health Surveys

Residents receive a push notification for a survey every week. After filling out the survey, users can view their health data compared to average US population based on neighborhood (measured by miles radius from you, radius can be variable).

Based on NFR 3, FR 1

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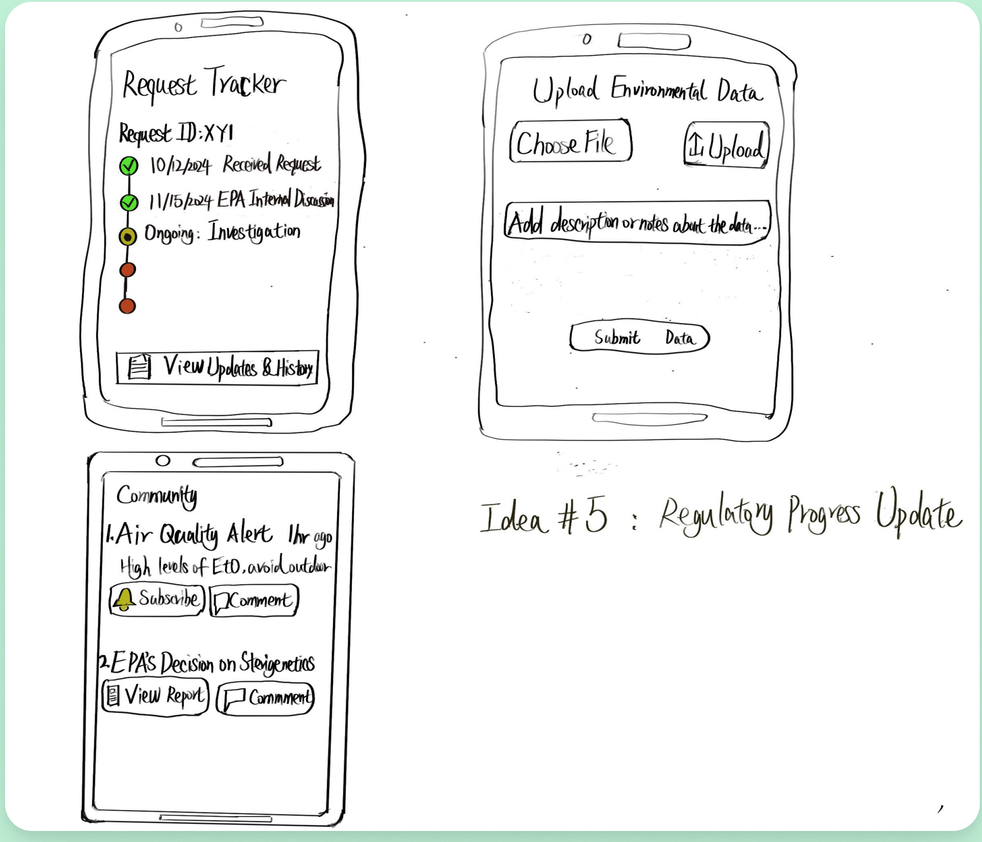
DESIGN IDEA #5

Regulatory Progress Update

A communication platform between community and researchers that allows researchers to upload collected environmental data and send requests to regulatory agencies to investigate the issues.

- Communities members can receive timely updates and voice concerns/questions.
- Includes progress trackers, decisions made with reasonings, and actionable items.

Based on NFR1, NFR 2, NFR 3, FR 2, FR 4



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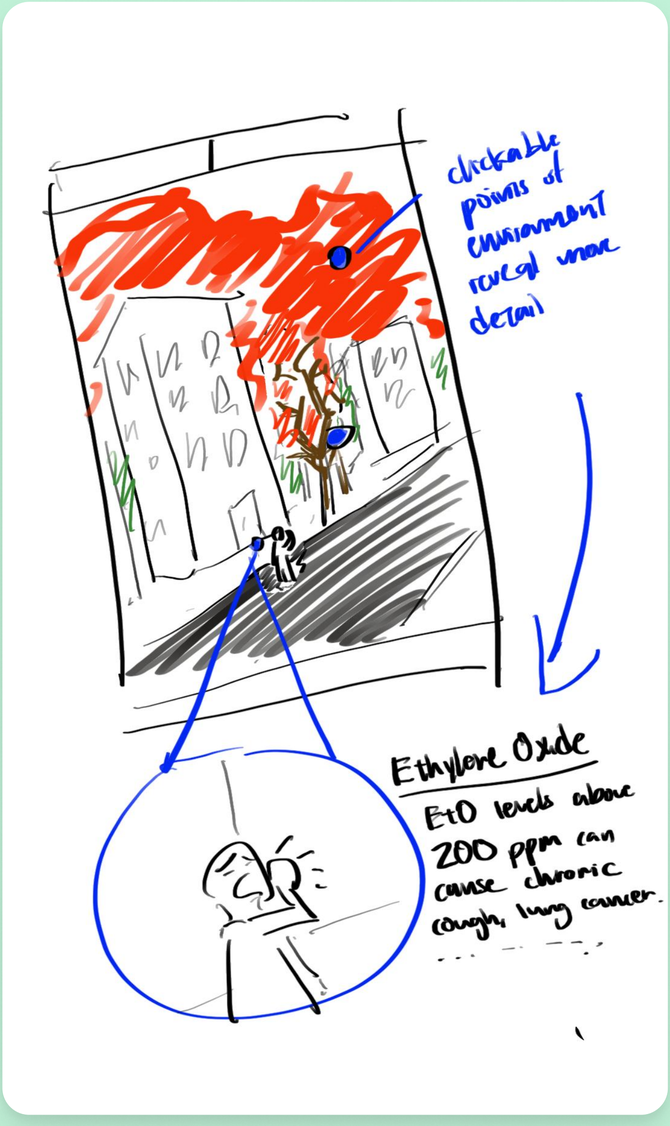
DESIGN IDEA #6

AR Future Vision to Raise Awareness

An application using VR/AR to visualize and dramatize data to see the impacts of invisible pollutants in future communities without interventions.

- Tackling the ideas of not understanding the problems and emphasizing the **longitudinal impacts** of pollutants on the mental and physical health of impacted residents, that lead to societal/generational impacts.
- e.g. When you hold a phone over a street, it will show the pollutants in the air as a bright red color showing the spread of EtO in the environment and a person coughing on the streets.

Based on NFR 3, FR 1



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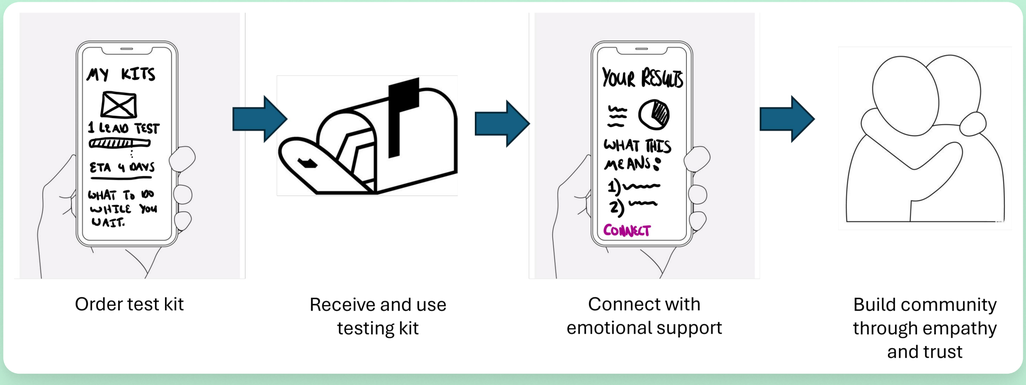
DESIGN IDEA #7

Testing Kits and Support

Ordering site for contamination test kits with clear tracking and easy to understand test result breakdown with informational resources.

- Foster a safe and open environment to build empathy and give members support roles.
- Create actionable steps for coping and learning based on results.
- Breakdown contamination impacts in digestible format and terms



Based on NFR 1, NFR 3,FR 1, FR 2

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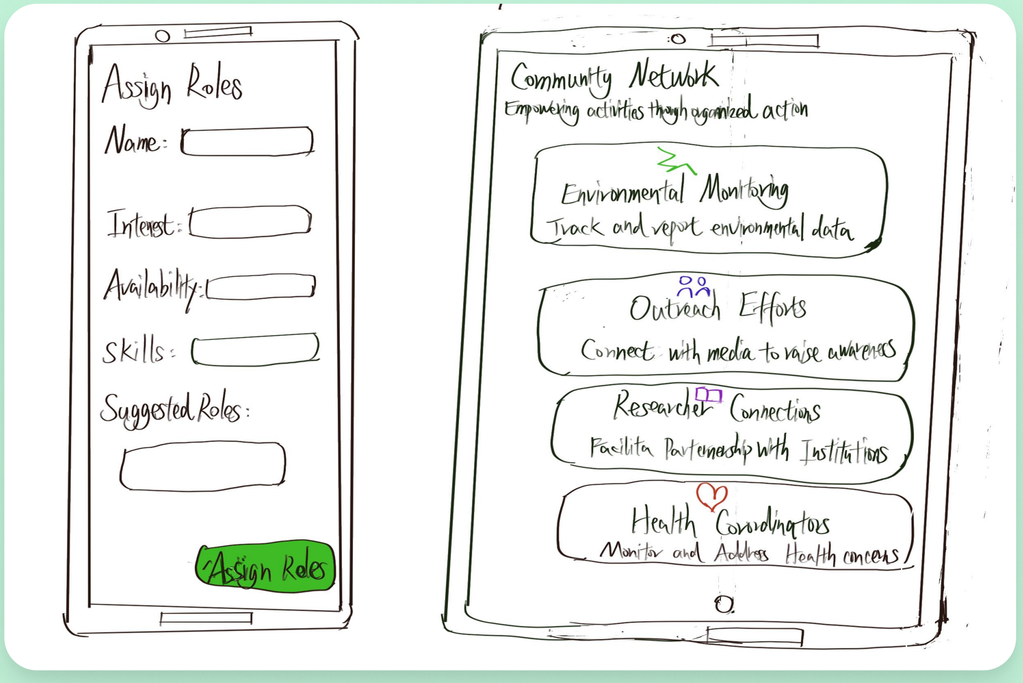
DESIGN IDEA #8

Fence-line Community Organization & Network

A digital network that organizes impacted communities, assign roles based on interests, availability, and skills

- Roles include environmental monitoring, outreach, researcher connection, and health coordinators
- Foster smooth coordination within the communities
- Enhance community engagement, maximize their strength, and empower them to make changes
- Promote streamlined communication and enhance relationships between residents and researchers
- Raise awareness of environmental issues by collaboration with media

Based on NFR 1, FR 3, FR 4



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DESIGN IDEA #9

Workshop Events for Discussion and Collaboration

Application that hosts workshops to emphasize the urgency of the health impacts to key stakeholders.

- Video call capabilities for people who cannot attend the live event.
- List of attendees from key stakeholders.
- Planning/agenda feature to see what future is being imagined and subsequent workshop of collaboration.

- Create an environment of **exploration and trust between stakeholders** and consider feedback from researchers and communities in shared environments.
- Present options for actionable steps to change give the increased awareness.

Based on NFR 2, FR 2, FR 4

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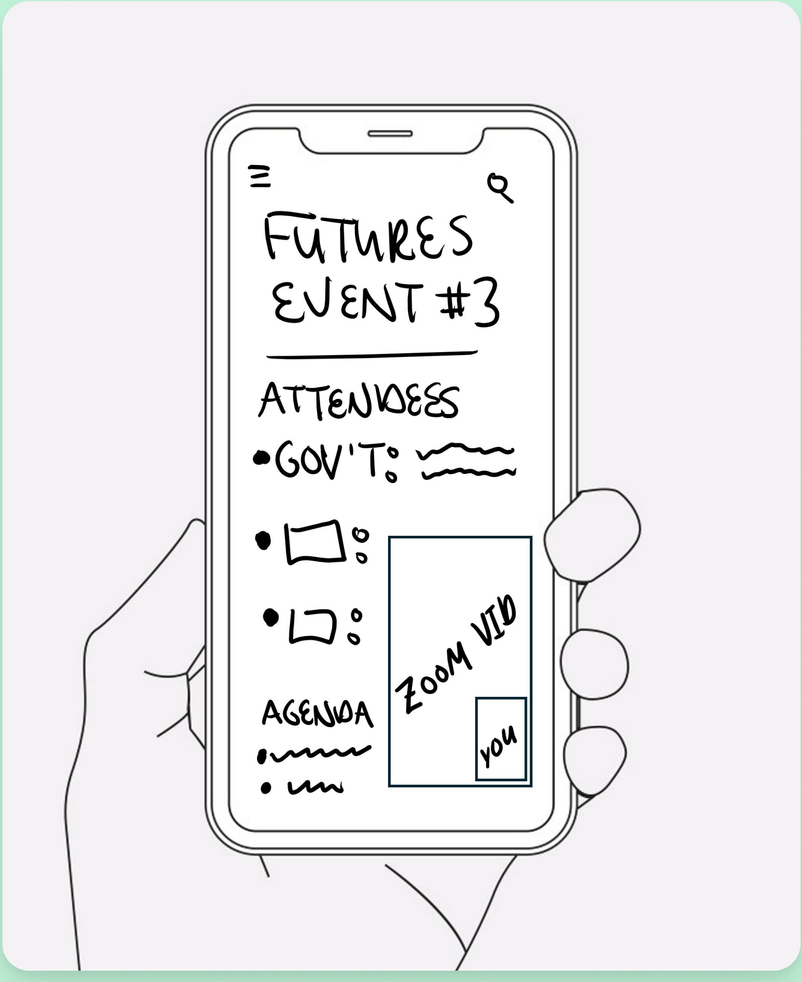


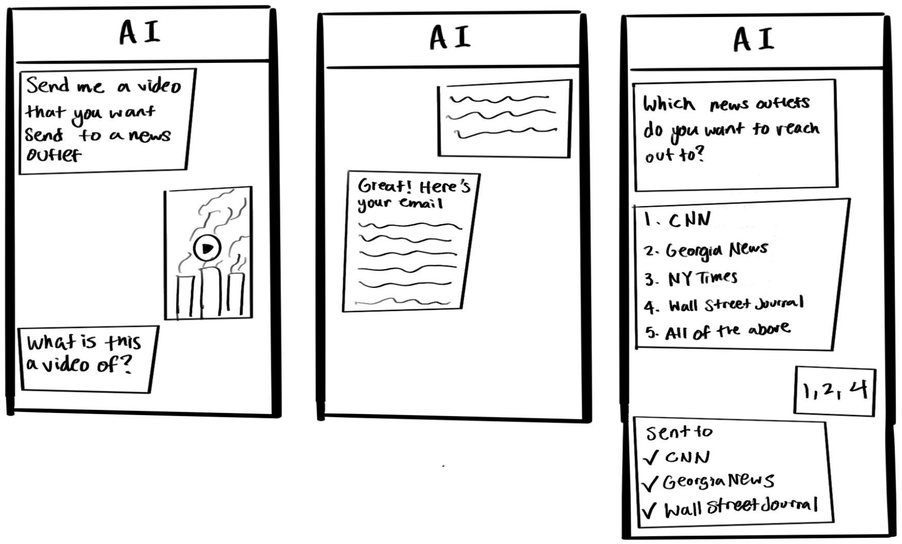
DESIGN IDEA #10

Contact media through AI chatbot

Similar idea to resist bot, a chatbot that turns your texts into faxes, postal mail, or emails to send to your representatives in minutes.

- Increasing media coverage on an environmental injustice issue impacting a community can generate the largest awareness on the issue
- Applies more pressure to governmental agencies and corporate companies to act to address the problem in some way.
- The chatbot will use AI to send emails and mention @s online to media, news outlets, radio channels to generate large interest in spreading awareness on the topic.

Based on NFR 2, NFR 3, FR 4



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Top 2
Design Concepts

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TOP DESIGN CONCEPT #1

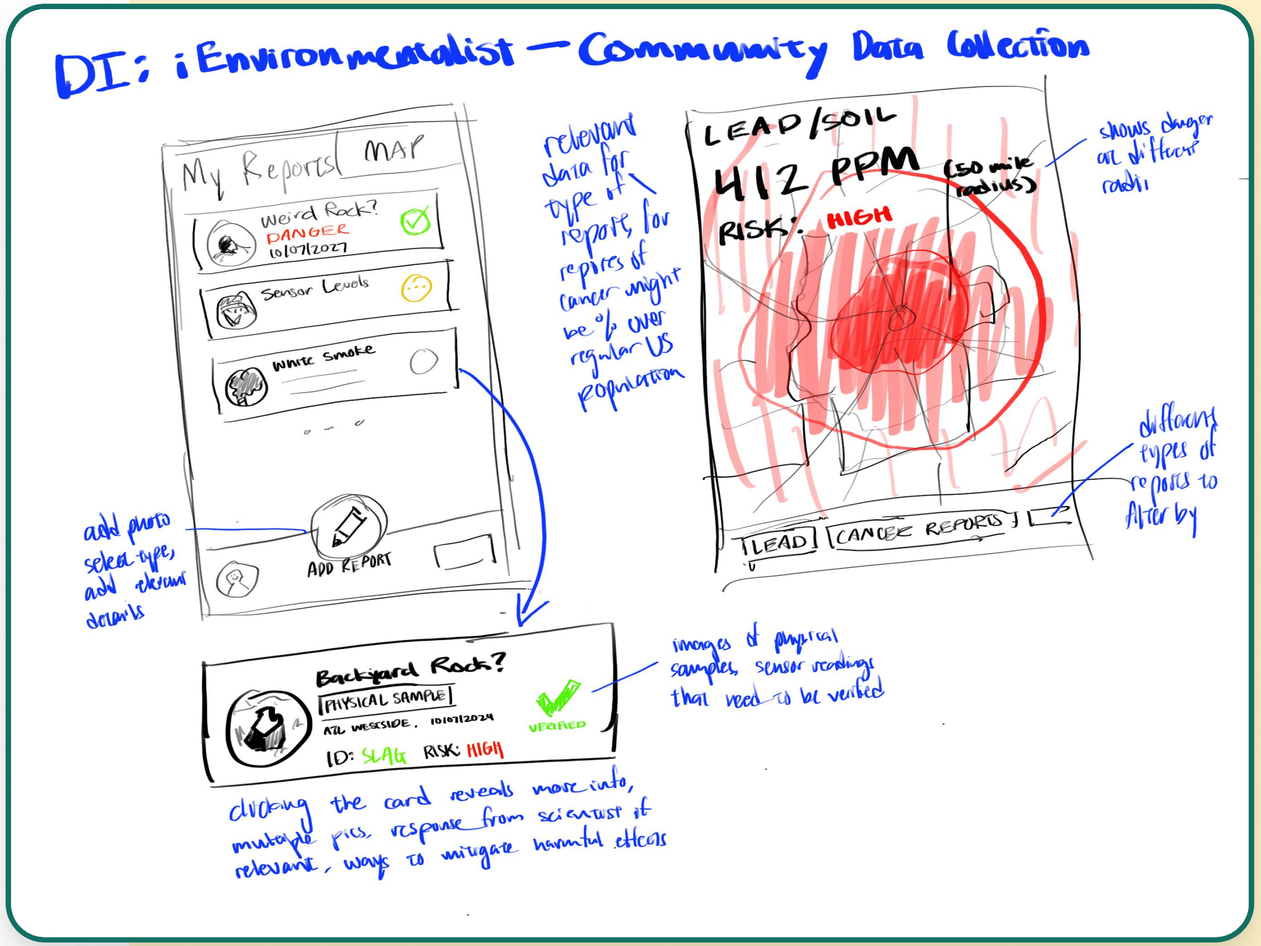
Community Data Collection

FR1: Make health risks relevant and immediate.
Each report has a danger level, immediate effects.

FR2: Suggest doable actions.
Each report also has specific action items.

FR3: Empathize with community nuances.
Researchers can read qualitative report details.

FR4: Foster safe discussion from all residents.
Each report allows community discussion and identification.



Design Idea #1

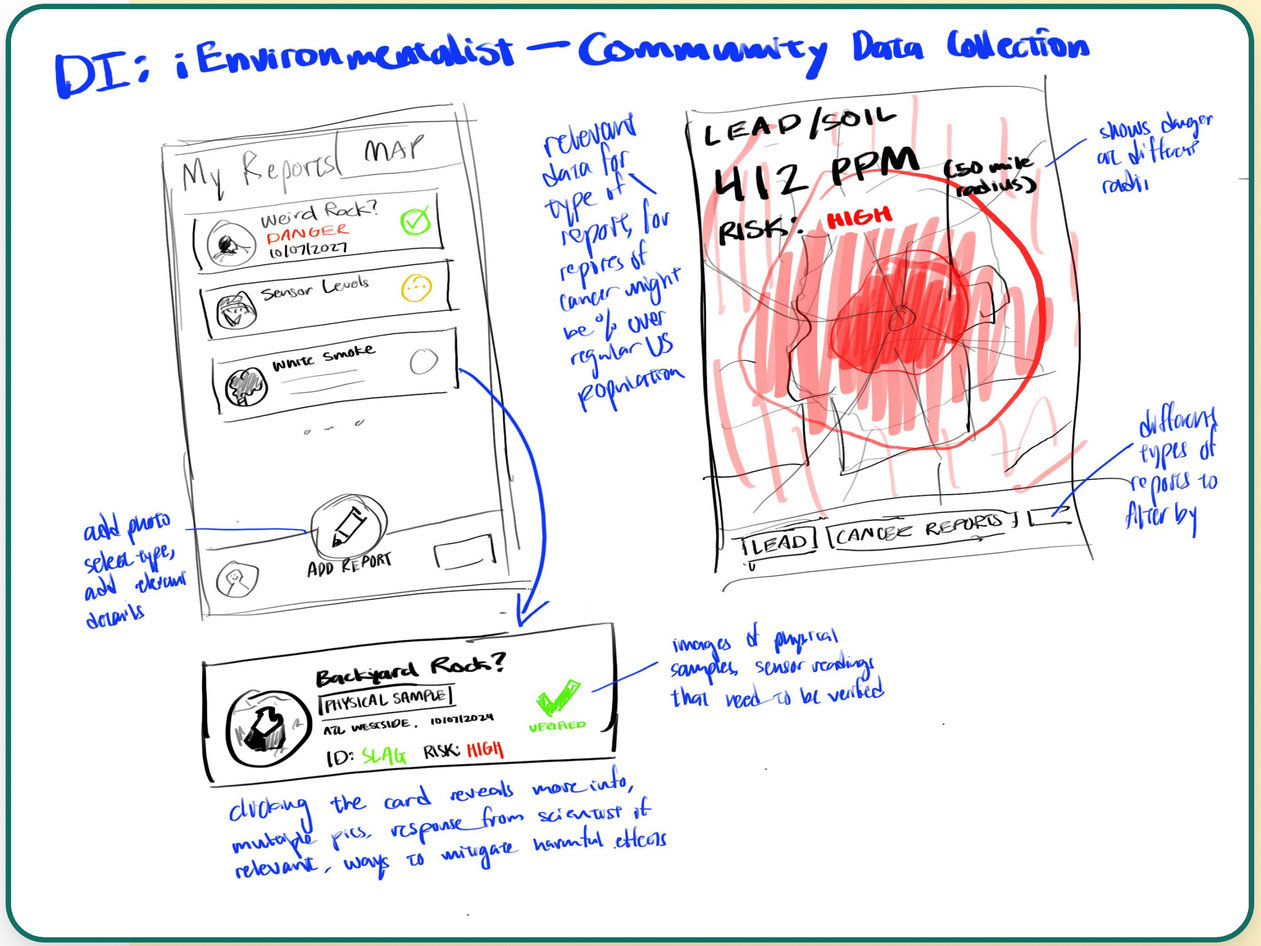
TOP DESIGN CONCEPT #1

Community Data Collection

NFR1: Prescribe order and hierarchy.
Researchers and residents have different roles, residents can become expert identifiers.

NFR2: Make processes transparent.
Each report also has specific action items.

NFR3: Easy to learn and use for anybody.
System allows users to take photos and diary entries, any other action items are explained by researchers.



Design Idea #1

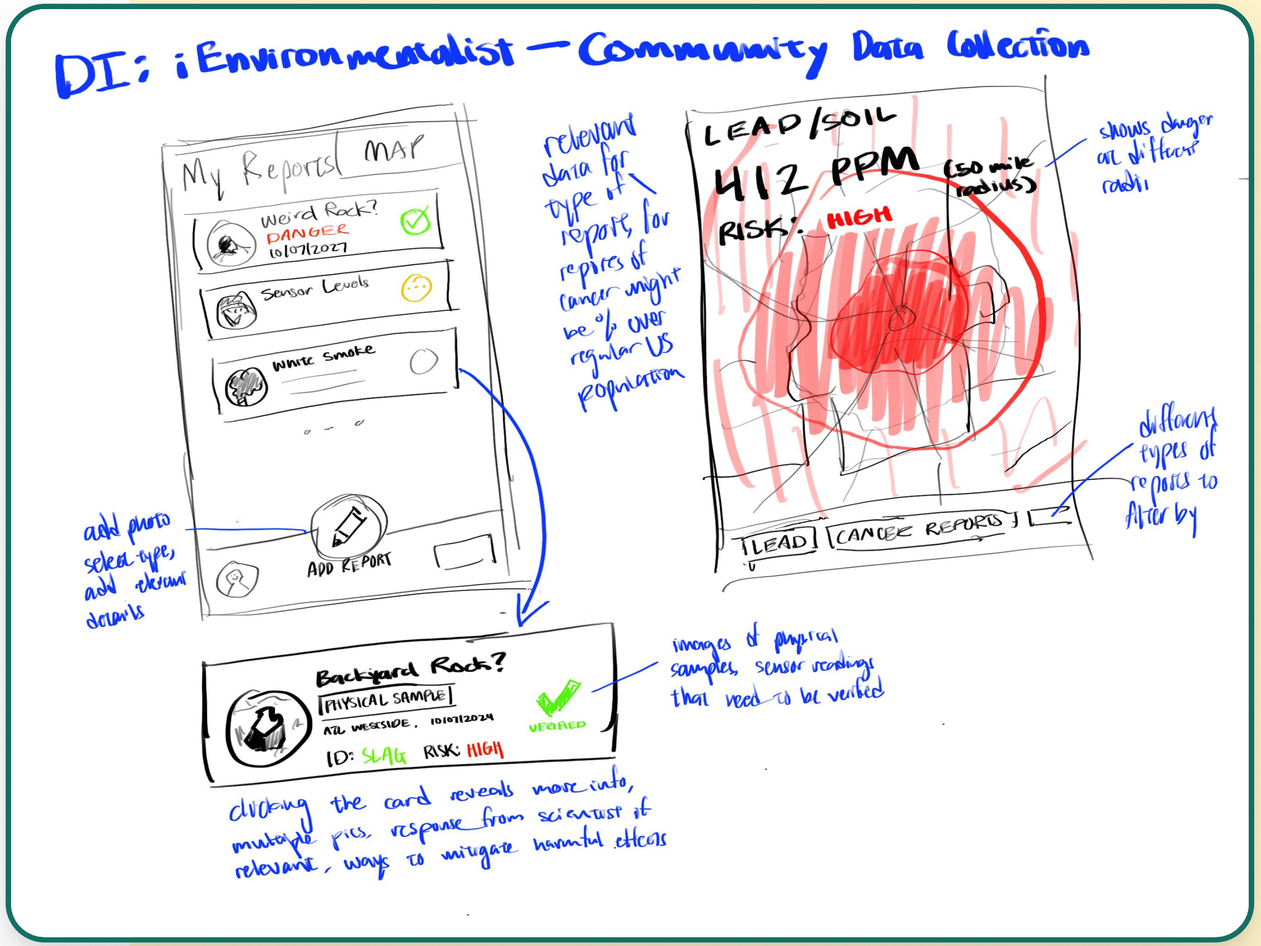
TOP DESIGN CONCEPT #1

Community Data Collection

Weaknesses and Limitations

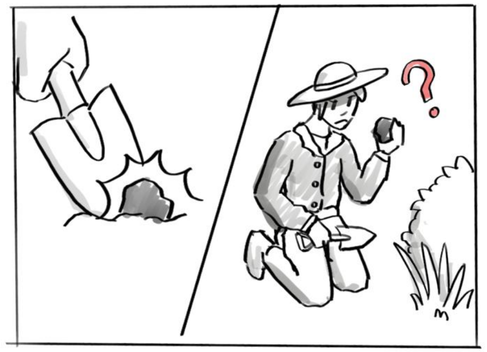
Design puts a heavy burden on researchers, who individually verify and respond to reports with individualized feedback.

Design may receive many false positives of reports that are not pollutants.



Design Idea #1

Community Data Collection



Micah is doing some gardening in their yard when they discover a strange rock like substance which they have not seen before.

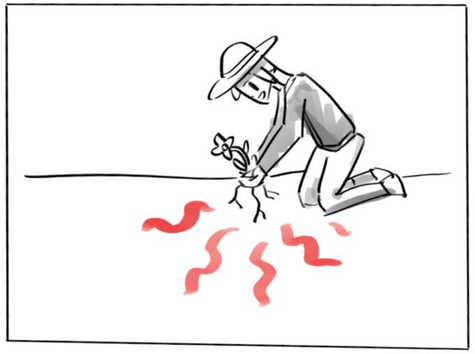
They take a picture of it and upload a report to Fenceline. The report includes date, location, and details of discovery, written by Micah.

Some users on Fencline preliminarily identify it as slag, which contains dangerous levels of lead. Fenceline aggregates similar reports based on location, showing many reports of slag on Atlanta's west side.

Lin is an environmental scientist who has worked with lead contamination before. Experts based on location and specialty are notified when enough reports substantiate a problem.

After coordinating on Fenceline, Lin meets Micah in their neighborhood to discuss the situation and collect physical samples for lab testing.

Micah gets a notifaction when Lin completes her testing. In the report, danger of the contaminant is described, as well as next steps Micah can do to minimize the immediate effects.



Based on the advice from Fenceline, Micah plants flowers in their yard which can help stabilize the soil lead levels.

Using the qualitative reports on Fenceline in addition to her own research, Lin and Micah's community make a case in court about the dangers of slag, forcing goverment clean up and regulations.

TOP DESIGN CONCEPT #2

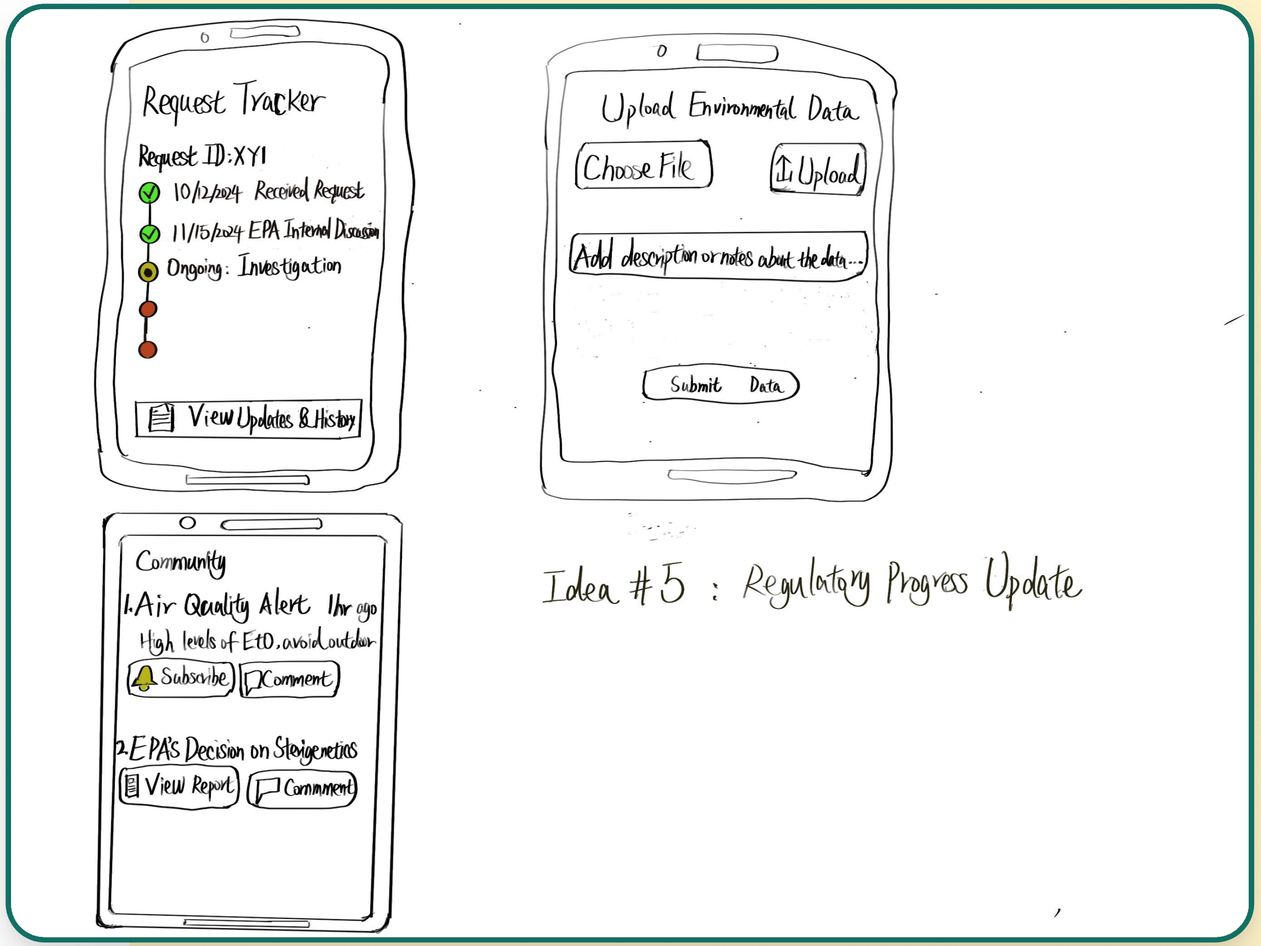
Regulatory Progress Update

FR1: Make health risks relevant and immediate.
Design facilitates deadlines and understandable explanations of data reports.

FR2: Suggest doable actions.
Design itemizes actions by role with simple timelines

FR3: Empathize with community nuances.
Design cross communicates with each update to encourage questions

FR4: Foster safe discussion from all residents.
Moderated chatting and communication enforce safety in forum component of the tracker.



Design Idea #2

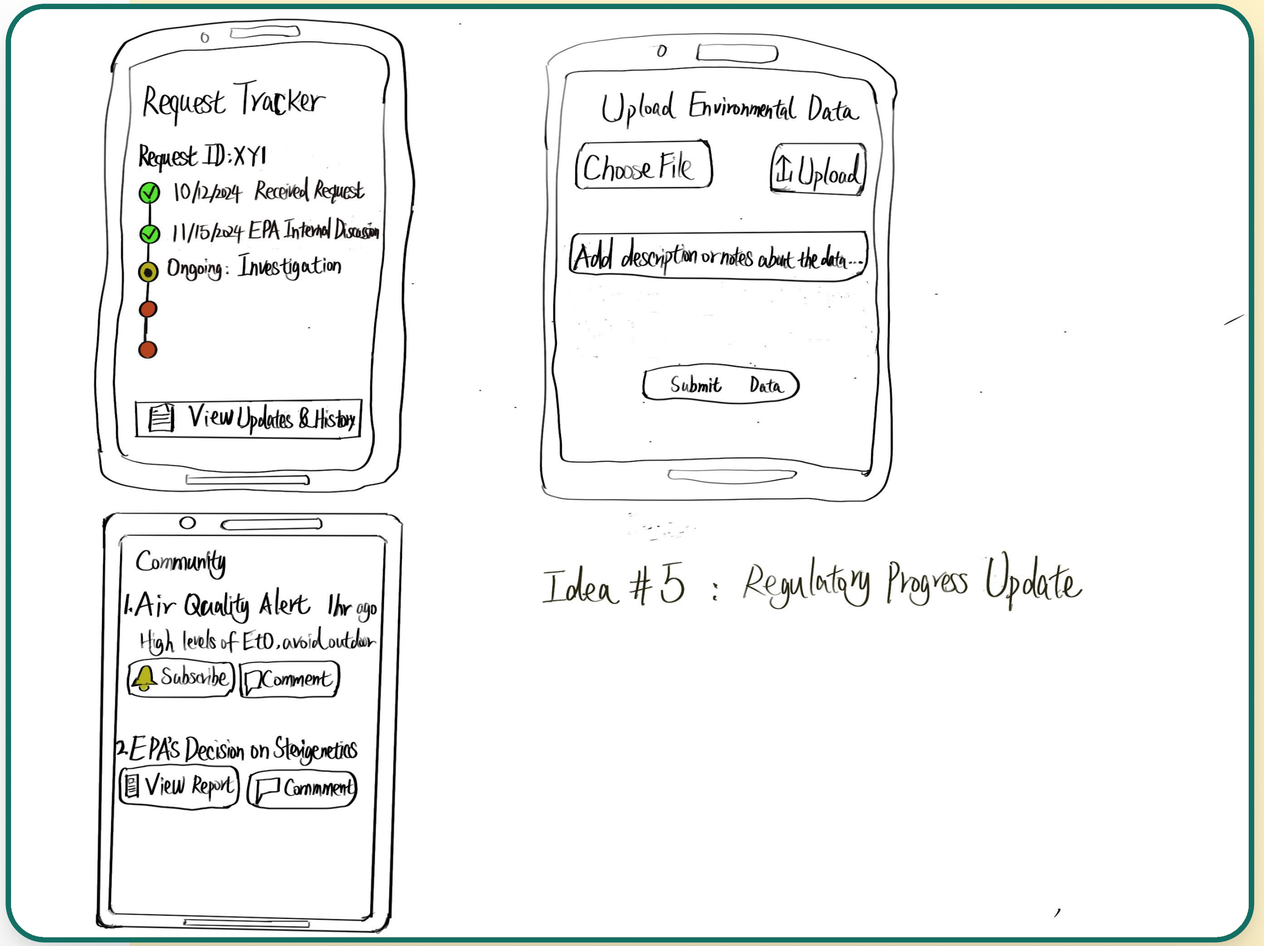
TOP DESIGN CONCEPT #2

Regulatory Progress Update

NFR1: Prescribe order and hierarchy.
Information architecture allows for simple internal organization.

NFR2: Make processes transparent.
Changes, delays, and progress to tasks are highly visible.

NFR3: Easy to learn and use for anybody.
Design encourages discussion to eliminate jargon filled data reporting and increase clarity.



Design Idea #2

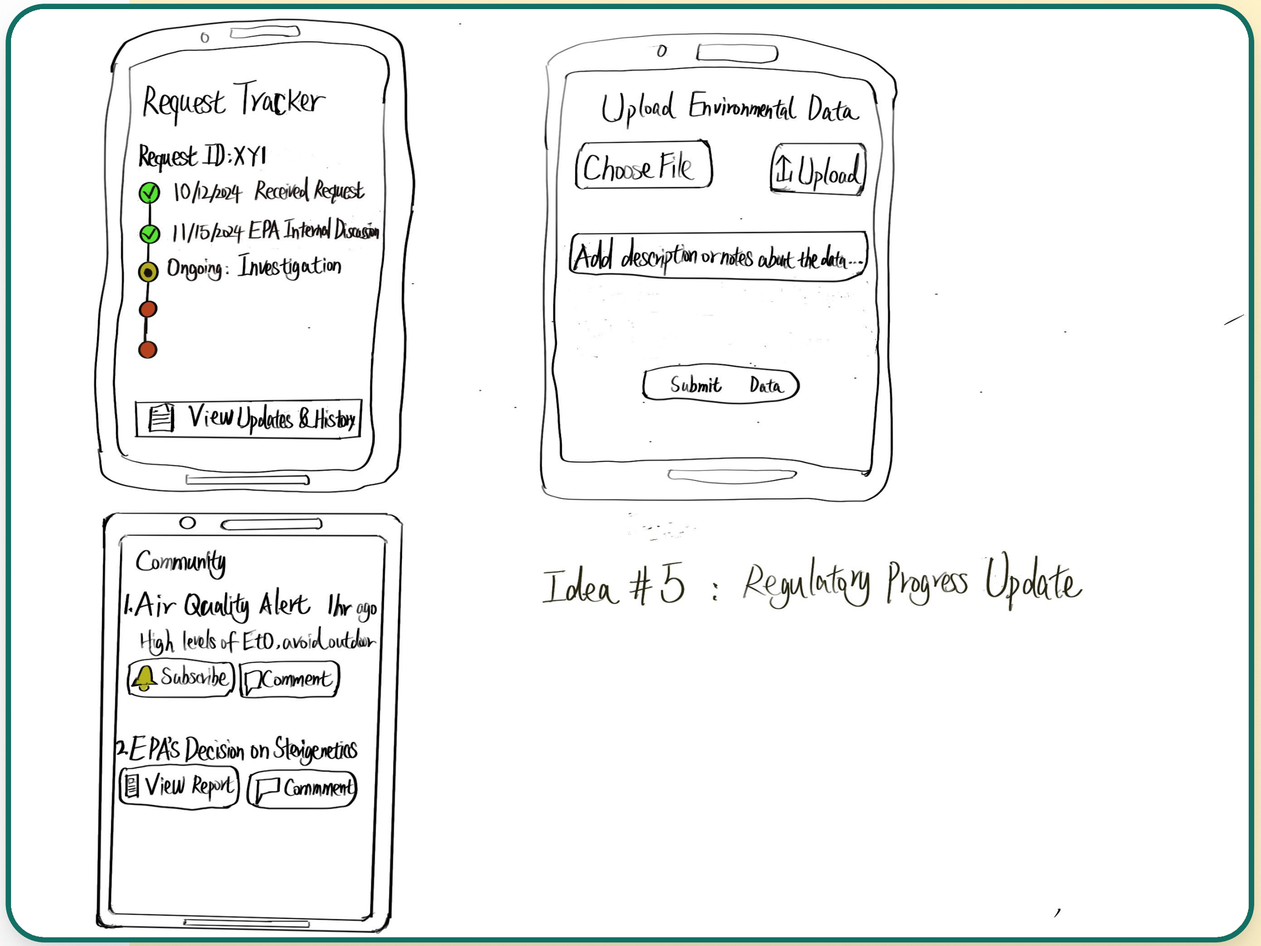
TOP DESIGN CONCEPT #2

Regulatory Progress Update

Weaknesses and Limitations

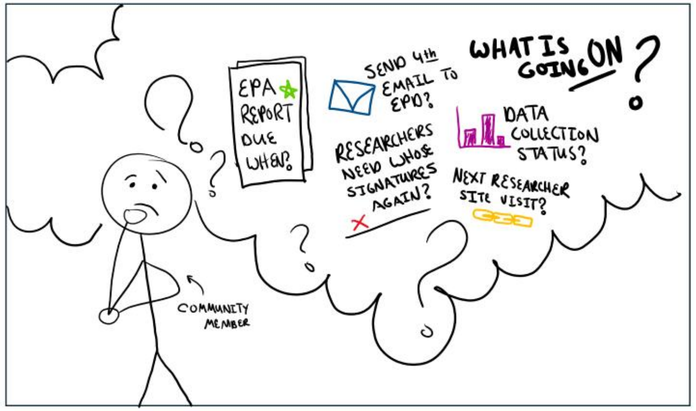
Designed for collaborative organization rather than as a tool for data collection.

Progress trackers and decision logs don’t capture the full complexity of regulatory processes.

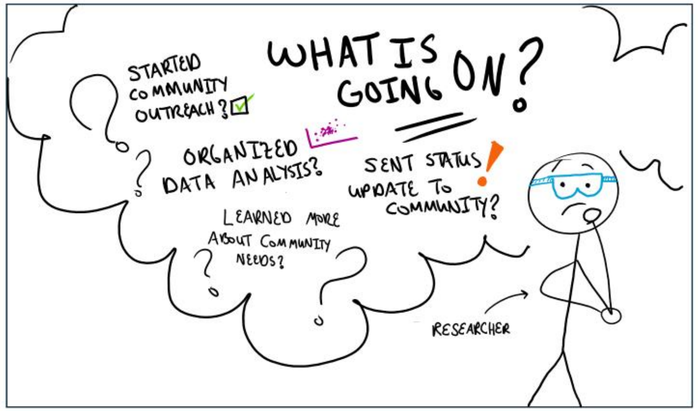


Design Idea #2

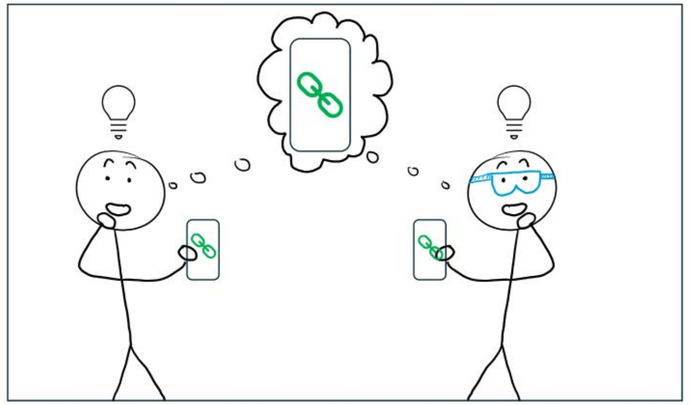
Regulatory Progress Update



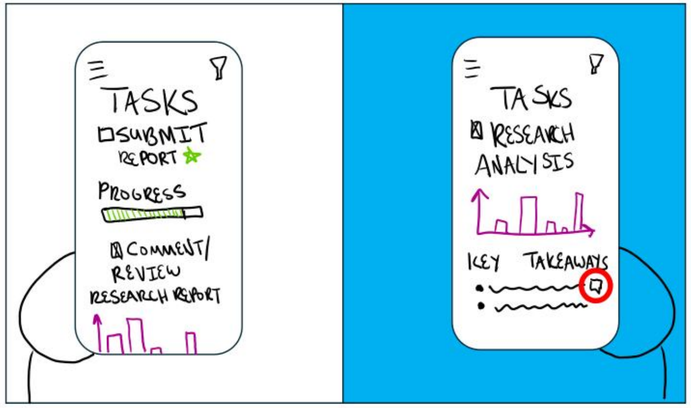
Community member is confused and overwhelmed by the many steps it takes to collaborate and make a change.



Researchers also feel frustrated and overwhelmed by navigating the many to-dos required to overcome red tape.

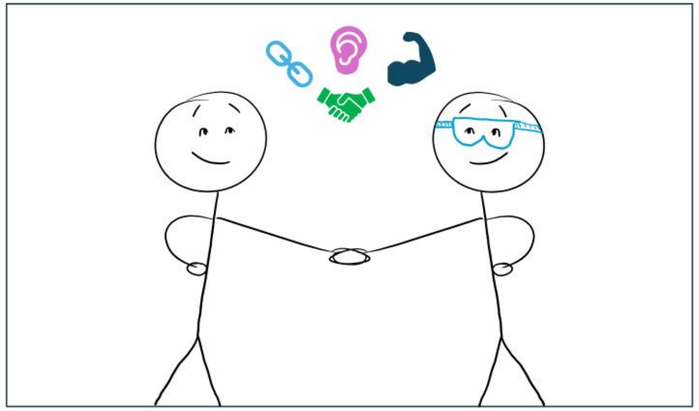


Community members and researchers realize an interface exists to better organize and communicate the requirements and share updates.



Interface foremost functions as a task tracker to solidify needs and provide resources to streamline outreach and understand reports.

Interface supports questions about the status updates with key features to edit or post information based on researcher or community member/leader role.



Communities and researchers are better connected and therefore stronger in their partnership as both sides listen and stay on task with each goal's requirements.

Thanks!

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