Participatory Action Research and Soundscape Collection Methods for Cultural Preservation

An Interactive Qualifying Project submitted to
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Authorship

This report was written collaboratively by the members of this IQP team: Ryan Birchfield, Hannah Brooks, Adele Burton, and Mackenzie Goldschlager. This report is divided into multiple chapters and sections. Members wrote individual sections and the group revised and edited sections as a team. We also completed this report with the help of our advisors, Professor Carrera and Professor DiMassa, who aided in the editing and revision processes throughout the duration of the project.

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Executive Summary

Local industry decline has threatened the cultures, identities, and economies of industry-dependent regions. This project's sponsor, Kat Austen, is specifically concerned with capturing the identities of regions affected by mine closures and looks to bring awareness to cultural crises in these regions through soundscape compositions. Austen pursued a soundscape project most recently in Lusatia, Germany, a region whose culture revolves around mining. This region was the focus of her 2020 project, *This Land is Not Mine*. This project struggled with limited website engagement and COVID-19 related obstacles. Our project bridges these gaps by proposing methods for collecting soundscapes in remote, changing landscapes like Lusatia. The goal of our project was to assist Kat Austen with improving the techniques used in *This Land is Not Mine* to suggest methods for her upcoming *Jiu Valley Sounds* project in a former mining area in Romania. First, we determined effective methods for implementing such projects remotely. Then, we developed a smartphone application prototype to assist in community participation. Finally, we recommended an outreach plan to Studio Austen to increase engagement in *Jiu Valley Sounds* and beyond.

We identified effective Participatory Action Research (PAR) methods applicable for remote implementation in the Jiu Valley. We conducted background research on technology access and use in the Jiu Valley. We also carried out a literature review to discover existing PAR methods, focusing on topics like soundscape collection, and workshop methods especially those related to environmental topics.

Our preliminary research led to the development of a three-tiered approach to allow participation for people with different levels of technology access: "high technology access", "intermediate technology access", and "low technology access", as depicted in Figure 1 below.

Figure 1

Smartphone Use with Internet Access

Ability to Record Sounds Without Internet Access

No Technology Access

Technology Access Tiers
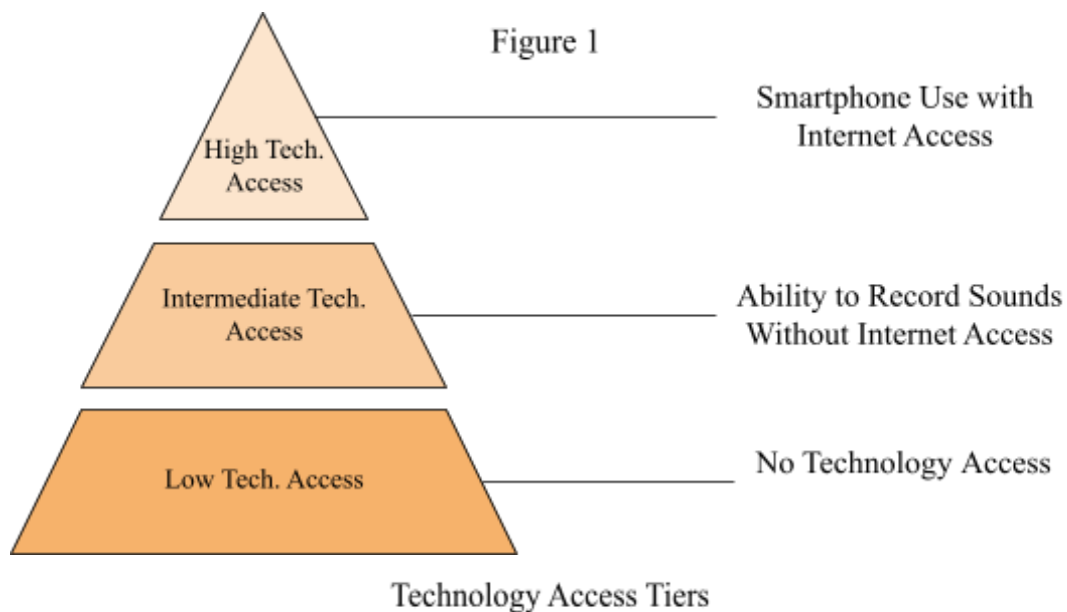
To accommodate the **lower technology access** tier, we recommend guided soundwalks led by those familiar with the landscape. The group would walk a specified route, collect sounds through the soundwalk guide's smartphone, and upload the collected sounds using the application.

For the **intermediate technology access** tier, we recommend a checkout system. This system includes partnering with local community centers, libraries, and schools to lend out handheld field recording devices. Participants can conduct an individual soundwalk and upload the recordings through a link to Studio Austen's Zenodo database on the *Jiu Valley Sounds* Facebook page.

Figure 2

Map View

To accommodate the **high technology access** tier, we created a **sound collection application for smartphones** called *Jiu Valley Sounds*. This application is an easy-to-use sound collection platform that gathers **community-collected sounds** for Austen to create soundscapes. The goals of the application were to encourage community engagement, create a streamlined sound submission process, and to promote interaction between people and their environment. The home page of the application is the sound collection map (Figure 2). The map shows "waypoints" that other participants have submitted representing locations where culturally-relevant sounds can be recorded, identified with the red pins. This feature allows for a community-driven sound collection experience for each user, as it is repopulated with Austen-approved locations.

There are two ways to submit sounds. From the sound collection map, users can click a waypoint and submit sounds from that location. Users can also submit sounds without a waypoint by navigating to the sound submission page via the menu button. This feature asks users to identify the significance of their sound submission and allows them to share their individual experience with sound collection in their environment.

From the menu on the sound collection map, users can submit a location for consideration. Users can submit a location based on the variety of sounds at that location or the cultural, historical, or emotional value that location holds. This feature promotes participant interaction with their environment.

To increase participation in *Jiu Valley Sounds*, we reached out to various individuals and organizations. We organized our network of contacts into a comprehensive spreadsheet and created a Facebook page for the project. The **contact spreadsheet** includes columns to organize names, locations, personal career descriptions, role in the project, contact information, and past correspondence. Rows are color coded based on the type of contact: **Active, Inactive, or Recommended.** Active contacts have been responsive and are helping with the implementation of *Jiu Valley Sounds*. Inactive contacts have been helpful, but are not actively aiding in the implementation of the project. Recommended contacts are those who we did not reach out to, but we recommend contacting them to help with *Jiu Valley Sounds*.

We leveraged the **snowball method** to grow our network. We connected with English-speakers who trusted us because they were referred by someone they knew. The snowball method, in conjunction with the use of Facebook Messenger, quickly grew our connections.

Figure 3

Contact Tree
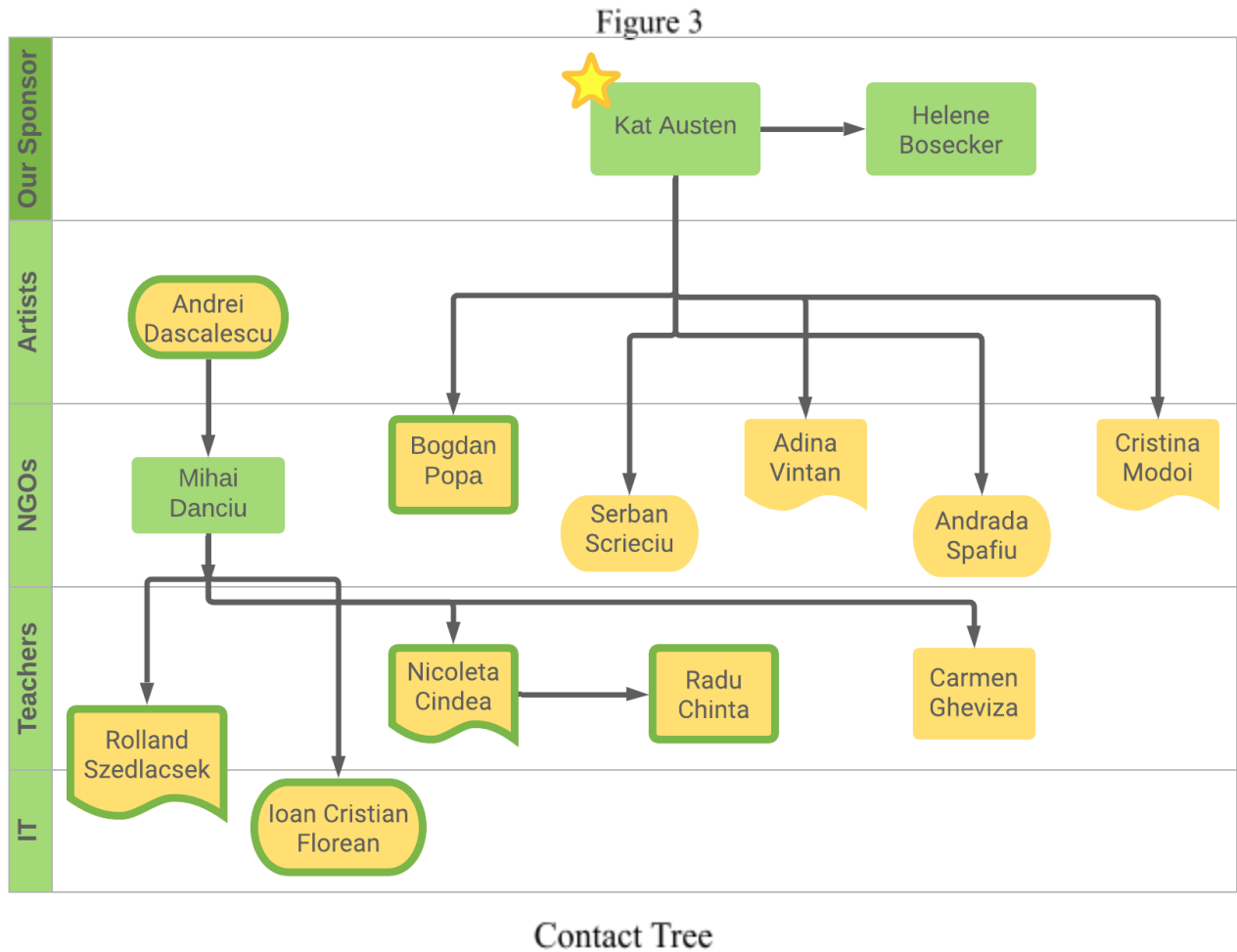
While looking for contacts to initiate the snowball method, we found many active Jiu Valley community pages and student groups on **Facebook**. Through initial interviews, we learned that email was not a preferred method of communication. Thus, we created a Facebook profile and page. This allowed us to promote the application, publicize the project, and to communicate with community members. The page provides an account under which we can join local Facebook groups to continue to grow the network.

Our team used our successes and failures to make recommendations for the continuation of networking in the Jiu Valley. We recommend maintaining **active communication** and reaching out to Recommended contacts to fill project roles. We also recommend maintaining an **active social media presence** on Facebook by regularly updating project information, posting a link to download the application from the Google Play Store, and posting example sounds and community member biographies. The other components of the recommendations include general tips for keeping the Facebook page active.

Because our recommendations for *Jiu Valley Sounds* are specific to the region, we also recommend **generalized methods for future sound collection** projects elsewhere. These recommendations include conducting background research, identifying inclusive engagement strategies, and establishing outreach methods. From our experience, we recommend conducting background research and preliminary interviews to develop a strong cultural, historical, environmental, and technological context for future projects. Next, we recommend identifying the best methods for conducting a sound collection project by creating implementation tiers. Finally, we recommend establishing the best outreach methods by determining the most popular communication methods in the region.

The success of our outreach along with the creation of an application prototype and technology access tiers will help the success of the *Jiu Valley Sounds* project. We are confident that the application and other implementation methods will increase remote participation in this project, and we hope that our experience will help inform the methods of future sound collection projects elsewhere.

1. Introduction

Major local industries contribute to cultural identities and influence economies. Historically, the decline of local industries has threatened the cultures, identities, and economies of industry-dependent regions. Soundscapes, a form of environmental art, can be used to capture the evolution of culture in such regions. Community involvement through Participatory Action Research (PAR) creates culturally and environmentally representative soundscapes. Kat Austen, the sponsor of this project, uses inclusive research methods to create soundscapes in a series of places undergoing major industrial and environmental transitions. The focus of the next project in the series is the Jiu Valley in Romania, where Austen will carry out *Jiu Valley Sounds*.

Austen has pursued other soundscape projects in similar European communities, most recently in Lusatia, Germany, a region whose culture revolves around mining. This region was the focus of Kat Austen's 2020 project, *This Land is Not Mine*. This project struggled with limited website engagement and COVID-19 related obstacles. Our project bridges these gaps by proposing methods for collecting soundscapes in remote, changing landscapes like Lusatia and the Jiu Valley.

The goal of our project was to assist Studio Austen with improving the techniques used in *This Land is Not Mine* to suggest methods for conducting the *Jiu Valley Sounds* project. The main focus of our project addresses the pandemic-related struggles that *This Land is Not Mine* faced. First, we determined effective methods for implementing PAR remotely. Then, we developed a smartphone application prototype to assist in community participation. Finally, we recommended an outreach plan to Studio Austen to increase engagement in *Jiu Valley Sounds*.

2. General Background

This paper is organized into eight chapters, three of which describe the relevant methods, recommendations, and/or results for each of our three objectives. Chapter 4 includes specific background information not provided in this chapter. This section includes general background that informed the project as a whole, and is not specific to any one objective.

This chapter discusses industry decline and cultural loss, how cultures can be preserved, and how certain preservation techniques are relevant to Studio Austen. We first examine how industry decline negatively affects communities. We then explore how Studio Austen uses soundscapes and Participatory Action Research (PAR) to bring awareness to communities affected by change.

2.1 Industry Loss and Impact on Cultures

Jobs not only run the economies, lives, and future of humanity, but they also help define the purpose and progress of human advancement. One's occupation is intertwined with their person because it is how one chooses to live, make money, and spend their days. Therefore, when large, region defining industries die, so does the culture and communities that surround it. One such example is the closing of the Sturgeon Falls Mill in Northern Ontario, Canada. Prior to its closure, working at the mill had been a "family affair" in Sturgeon Falls (High, 2015). According to Steven High, every study participant interviewed in the town of 6000 was associated with the mill (2015). Consequently, Sturgeon Falls was devastated when new environmental regulations enacted in early 1990's threatened the old paper mill's viability. The community attempted to rally behind their mill and convinced the Ontario government along with local mill managers to convert the mill into a recycled paper mill. The government funding along with community support seemed to be saving the livelihoods of the people of Sturgeon Falls until 2002 when a U.S. company bought out the mill owners and decided to shut it down (High, 2015). Since 2002, Sturgeon Falls has struggled with deindustrialization throughout the region. People were forced to relocate to find jobs, and the community surrounding the mill crumpled. The demise of the Sturgeon Falls Mill is a prime example of how industry loss can

impact cultures. When a region is so intertwined with local industry, the loss of that industry can be economically and culturally devastating.

With the European transition away from fossil fuels, the cultures of mining communities, in particular, face pressing challenges. Mining regions across Europe, including Lusatia, Germany and the Jiu Valley, Romania are currently undergoing cultural identity loss due to industry decline. **Lusatia** is a region located between Germany and Poland. For over 200 years, its economy has revolved around energy generation and the mining of hard coal (Heer et al., 2020). The Sorbs, an ethno-cultural minority, include miners who live in the region. They speak Sorbian, which is currently classified as an endangered language (Schwab, 2008). In the last decade, dozens of mines have been closed and thousands of jobs have been lost in Lusatia. Lusatia attempted to find an industry to replace coal mining, but has struggled amidst the COVID-19 pandemic.

Figure 4

Map of Lusatia, Germany and the Jiu Valley, Romania. (Mapchart, n.d)

Similarly, the **Jiu Valley**, located in southwestern Romania, is also facing mine closures and major economic decline. Today, around 3000 miners are still employed, compared to 50,000 in the 1990's and 180,000 in the 1970's (European Commission, 2020). The Jiu Valley was historically agrarian until it became the nation's largest coal-mining region after the discovery of hard coal in 1840. Rapid expansion of the mining industry occurred after private mining companies became the property of the Romanian state, attracting thousands of workers (Constantinescu, 2012). The decline of the mining industry through mine closures and deteriorating infrastructure has significantly affected the Jiu Valley's inhabitants. Since the 1990's, the region has struggled with an aging population and increasing emigration rate.

Coal is the most abundant fossil fuel on Earth and about 49% of coal deposits are found

Figure 5

Gross inland consumption and production of hard coal, EU, 1990-2018
(million tonnes)
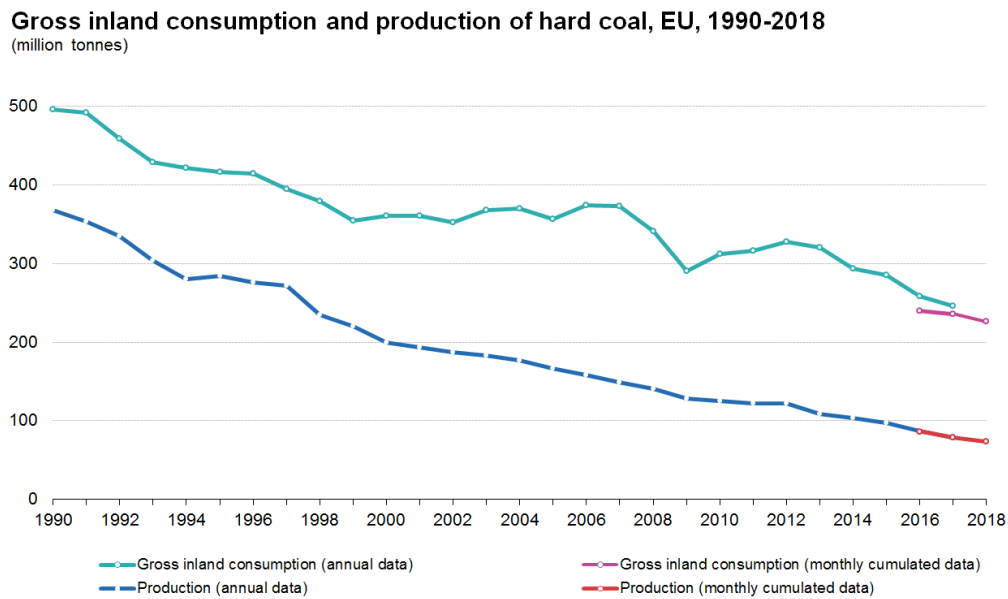
Source: Eurostat tables nrg_cb_sff and nrg_101m

ec.europa.eu/**eurostat**

The decline of production and consumption of coal in the EU since 1990. (eurostat, 2020)

in Europe (*Coal Mining | Definition, History, Types, & Facts*, n.d.). Around these deposits communities formed, mining became part of a strong identity for the regions and the miners, and local economies also began to revolve around the coal industry.

As climate change becomes a more prominent issue, science has developed cleaner forms of energy and the production and consumption of coal has dropped significantly (Figure 5), creating widespread unemployment in coal mining regions and other sectors. To help with ending economic dependency, the European Union has established budgets for programs such as the Just Transition Mechanism fund, using billions of euros to prevent the economic collapse of these mining regions (European Commission, 2020). The Just Transition Mechanism also works to introduce new and environmentally friendly industries to previous mining areas in order to revive the economy.

2.2 Environmental Soundscapes and Cultural Preservation

Environmental art allows for the preservation of culture while emphasizing environmental health, thus making it a great tool to represent cultures threatened by industry loss. As society's definitions of art and environment evolve, so does the relationship between the two (Thrones, 2008). Environmental art also captures the feelings and experiences that people have towards or with their own environment. In this way, environmental art can represent cultural identities (Belfiore & Bennett, 2007).

Environmental art has changed from traditional landscape art and sculpting to new forms of media like recordings, films, and photography (Bower, 2010). Acoustic ecology, the study of the dynamic relationship between sounds and their environment, informs the effectiveness of such media. This dynamic relationship includes the correlation between biological, anthropological, and geographical sounds (Paine, 2017). In recent years, acoustic ecology has lent itself to creating environmental art in the form of soundscapes. The term 'soundscape' refers to a wide scope of sound collection in which researchers can assemble and analyze a variety of recordings (Bower, 2010). Soundscapes include media like musical compositions, radio programs, or even rock concerts. However, the focus of this project revolves around **environmental soundscapes**.

Environmental soundscapes are a collection of sounds from a location, at a specific point in time (Davies, et. al., 2013). Environmental soundscapes record the natural sounds of a habitat, while simultaneously recording the human response thereto (Dumyahn, 2011). The impression and perception of environmental soundscapes vary from person to person. Soundscapes are analogous to visual landscapes, as they provide an instantaneous impression of the natural world. However, unlike a painting of a landscape, soundscapes create a more interpretive view of the environment. For example, the tone, volume, pitch, origin, location, and context in which a sound is heard, all play a role in developing the impression sound can leave on a listener (Schafer, 1977). While some of these attributes do not directly relate to sound, such as origin or location, they impact the meaning of sounds. This makes environmental soundscapes valuable tools to understand cultural identity because each person may experience sounds within their environment differently. The present rapid transformation of nature, society, technology, and science creates a unique situation in the regions discussed. *Jiu Valley Sounds* documents the experiences of communities using sound as a medium, as soundscapes possess ecological and social value (Dumyahn, 2011).

3.3 Studio Austen's Approach to Preserving Cultures

Studio Austen is interested in engaging with communities and cultures in more direct ways than by conducting research from afar. Austen uses Participatory Action Research (PAR) in some of her environmentally and culturally-driven projects, looking to strengthen the educational and introspective value of their outcomes through citizen science, public and private workshops, discussions, and other participatory methods.

2.2.1 Participatory Action Research for Community Involvement

PAR deliberately includes communities that are affected by a situation in the research process. It encourages members of the community to engage with their history, culture, and local issues while allowing them to draw their own conclusions. PAR is most often used when researching cultures or traditions, as those studies benefit the most from the direct participation of the people. The key to PAR is "research must be done 'with' people, not 'on' or 'for'

people."(Chevalier & Buckles, 2013). Thus, researchers are able to produce a more holistic and human result.

Throughout the PAR process, it is vital that all participants have equal control of the project. This equality in research is one of the reasons that PAR is often used with underrepresented communities or people, as it allows them to represent themselves accurately (Datta et al., 2015). In the context of cultural preservation projects, Studio Austen uses PAR to allow communities to convey what is culturally or historically significant to their collective identities.

2.2.2 Studio Austen's Involvement with Preserving Cultures in Mining Regions

Austen's 2020 project *This Land is Not Mine* is part of a series of projects focused on sound collection through remote PAR. The project centered around the cultural crisis affecting the Sorbs in Lusatia. Austen intends to present the results of the project as sound compositions that encapsulate the identity of the Sorbs during this period of energy transition (Austen, 2020). The project began in the fall of 2020 and currently includes a website for uploading sounds, along with video guides for choosing and recording sounds.

Studio Austen has chosen to focus on the cultural crisis in the Jiu Valley region of Romania for the next project in this series. *Jiu Valley Sounds* will continue to address the topic of cultural preservation through sound collection and composition, improving on methods used in *This Land is Not Mine*.

3. General Methodology Organization

The mission of the project was to assist the Studio Austen team with refining current remote Participatory Action Research (PAR) methods used for the *This Land is Not Mine* project with the aim of applying these new methods in the Jiu Valley, Romania. To complete our mission, we developed the following objectives:

1. To determine the most effective and applicable technical methods for remote implementation of PAR.
2. To develop a prototype of a smartphone application to assist in remote sound collection methods for PAR soundscape projects.
3. To create and manage a network for rural communities to promote engagement through outreach and workshops.

The methods of this paper are divided into three main chapters, each dedicated to one of the three objectives listed above. Chapter 4 includes the methodology and recommendations pertaining to the creation of effective **remote PAR implementation using a 3-tiered approach**. Chapter 5 discusses the creation of a mobile **smartphone app** to collect soundscapes in the field, how it was designed and developed, and future improvements and maintenance suggestions for the application. Chapter 6 discusses the methods, results, and recommendations concerning **outreach strategies** for future soundscape projects. Chapter 7, discusses recommendations for **future soundscape projects**.

Figure 6
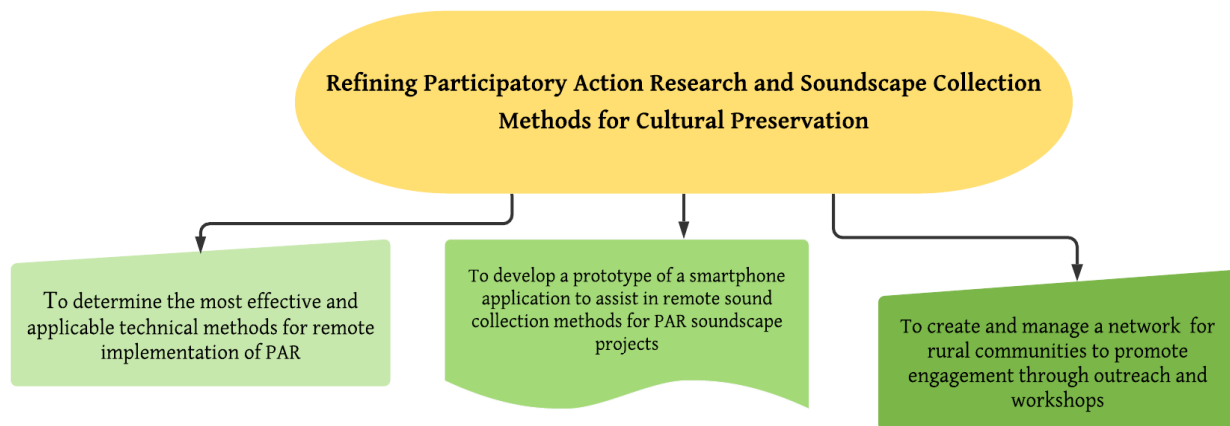
Methods Diagram

4. A Tiered Approach to Citizen Engagement

The first objective was to determine effective methods for the **remote implementation of Participatory Action Research (PAR)**. We established the extent of **technology use** in the Jiu Valley by contacting people who have first-hand knowledge of the communities. We also conducted a **literature review** to design a plan for the remote implementation of PAR. We interviewed Kat Austen to learn about her past experiences using PAR in environmental art projects and her goals for remote workshops.

Figure 7

To determine the most effective and applicable technical methods for remote implementation of PAR

Interview Kat Austen

Establish information on technological use in the Jiu Valley

Talk with previous participants of Studio Austen projects

Objective 1

4.1 Determining Technology Use in Rural Areas of Romania

To conduct remote PAR and sound collection through a mobile application in the Jiu Valley, we were concerned with determining the technological context of the area. In terms of household internet access rates, Romania stands relatively low compared to other nations in the European Union (EU). As seen in Figure 10, Romania measures within the **lower 25%** of nations in the EU for internet access rates (eurostat, 2020). Despite this, internet access in the country has been increasing. About **78% of households** had internet access in 2020, up 2.5% from 2019 (Chirileasa, 2021). However, with this rise of internet use, which is mainly prevalent in urban areas, rural areas are left behind. The country has been developing in two separate directions, with a population of impoverished Romanians in agricultural regions separated from a population of those in major cities benefiting from IT development and globalization (Muni, 2020). This trend is especially relevant to the situation in a rural area like the Jiu Valley.
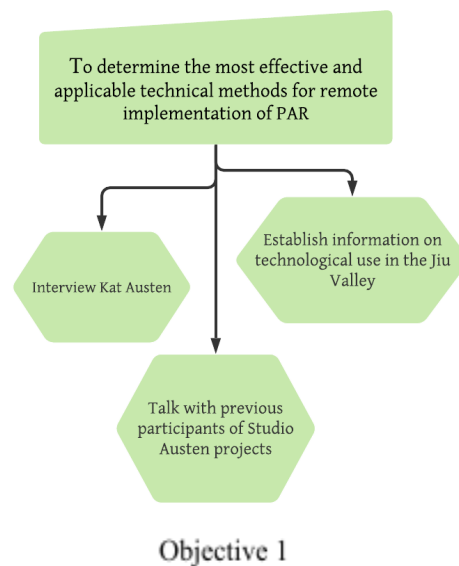
Figure 8

Internet access of households, 2014 and 2019
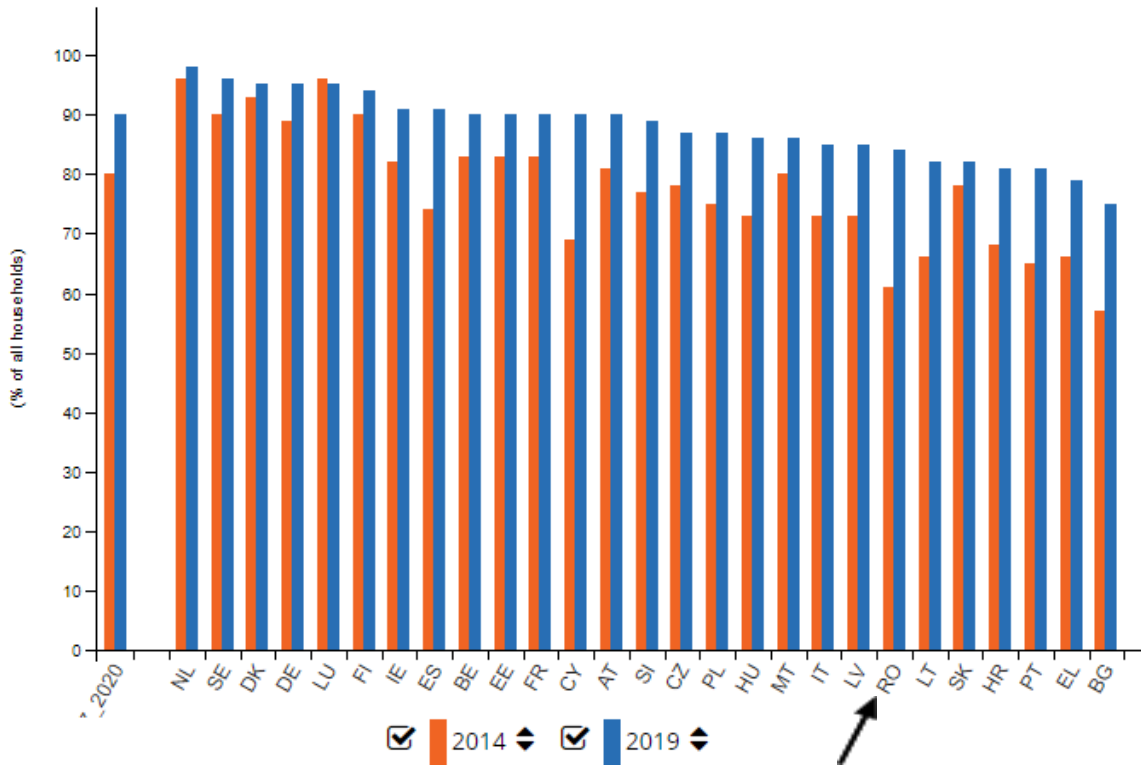
Internet access per household throughout the EU. See Romania, 7th from the right. (eurostat, 2020)

4.2 Designing Remote PAR Implementation in the Jiu Valley

To design a plan for remote PAR implementation, we conducted **expert interviews** and a **literature review** to gain insight into the Jiu Valley communities and sound collection techniques. We organized these methods into technology access tiers to increase participation in *Jiu Valley Sounds.*

4.2.1 Establishing Standards of Technology Use in the Jiu Valley

To design a plan to implement remote workshops in the Jiu Valley, we reached out to many different contacts. We gained knowledge on how the people in the Jiu Valley interact with each other and with technology. By reaching out to people in the area, we were able to obtain first-hand knowledge that is unavailable online.

Over Facebook Messenger, we contacted **Andrei Dascalescu,** the director of a documentary about the demise of the Petrila mine. It highlights the effects that closing the mine has had on the culture and history of the surrounding mining community. We gained insight into one of the Jiu Valley's cities, Petrila, as well as the history of mining in the Jiu Valley. We interviewed Dascalescu (see Appendix E), learned about the Petrila mine, and obtained another contact working in the valley.

Dascalescu's film reached a large audience, inspiring the creation of an NGO of the same name and mission shown in the film. The Planeta Petrila NGO emphasizes the cultural importance of the mining buildings and aims to preserve them as historical sites. Dascalescu put us in contact with **Mihai Danciu**, the secretary-general of the Planeta Petrila NGO. We conducted an interview with him (see Appendix D) in order to learn more about Planeta Petrila and **how community events are run in the valley**. Danciu has run many events in the valley including the Open Mines Day in Petrila that attracted over 1,200 people. Through this interview, we were able to explore the best ways to raise awareness for *Jiu Valley Sounds*, as well as how to encourage participation. Danciu also informed us that the industrial roots of the region dictate how business is conducted throughout the Jiu Valley. This includes a dislike of email use for communication, as most people prefer phone calls. (M. Danciu, personal communication, April 7th, 2021).

4.2.2 Identifying Appropriate Engagement Strategies

Along with Jiu Valley experts, we **interviewed Kat Austen** after reviewing Studio Austen's past projects. In the interview (see Appendix C), we discussed the **levels of success of past projects**. Additionally, we **inquired about Studio Austen's workshops**, how outreach was

conducted for those environments, and how they have, if at all, been run in remote settings. Interviewing Kat Austen provided us with primary accounts of the intricacies of current PAR projects, including detailed information about the ongoing *This Land is Not Mine* project, which parallels *Jiu Valley Sounds*. We used the information gathered in the research and interview questions to **aid the design of remote workshops** and other methods of outreach.

After conducting each interview, we combed through information obtained using an **inductive coding process**. First, we reviewed our interview transcripts to obtain a broad understanding of emerging patterns. Next, we coded line-by-line to create an organized list of categories. After analyzing these categories, we identified overarching themes in each interview. A summary of the results from this process can be found in Appendix N.

To design a plan for remote workshops, we conducted a **literature review** to highlight the **most effective methods of remote PAR** implementation based on **technology access and use**. We utilized the databases available through the Gordon Library at WPI to conduct the literature review. Keywords like '**Remote PAR**', '**Remote Workshops**', and '**Soundscapes/Sound Collection**' were used in this search. We assembled and analyzed **nineteen different studies** pertaining to PAR, soundscape collection, and workshop methods; focusing on studies related to environmental topics.

After determining the validity of the literature via the criteria chart (see Appendix G), we discussed the relevance of the main sound collection methods. The main methods used to conduct remote PAR for sound collection include:

- Soundwalks
- Acoustic surveys/questionnaires
- Smartphone technology (apps)
- In-person workshops

We also considered less common **secondary sound collection methods**. However, these methods were not thoroughly utilized or researched, thus, not proven to be as effective. These methods included:

- Remote workshops
- Remote soundwalks (via pre-determined collection points)
- Stationary recording devices

- Sound classification surveys
- Virtual reality soundscape experience
- Photovoice methodology

From the interviews conducted, we determined that technology access in the Jiu Valley is dependent on proximity to the towns and the demographic information of the participants. Therefore, we **developed three tiers for different levels of technology access**.

We populated each tier based on our project constraints. These constraints include our team's limited in-person access, language barriers, and limited technology access in the Jiu Valley. By analyzing methods that fit these constraints, we determined technological implementation methods that correspond to each tier.

The "**high technology access**" tier includes methods that employ smartphone technology, remote workshops, and virtual reality (VR) soundscape experiences. We deemed these procedures "high technology access" because to engage in these methods, the participant must have personal access to smartphones, the internet, computers, and more.

The "**intermediate technology access**" tier includes remote workshops and remote soundwalks. We determined that these methods were suitable for "intermediate technology access" because they require the participant to have the ability to record sounds without smartphone access.

The "**low technology access tier**" includes soundwalks, acoustic questionnaires, in-person workshops, stationary recording devices, and sound classification surveys. These methods require no personal access to any form of technology, so long as a facilitator is present. A diagram of the methods sorted into tiers can be found in Appendix I, and the tiers are portrayed in Figure 9 below.

Figure 9

Technology Access Tiers

High Tech. Access — Smartphone Use with Internet Access

Intermediate Tech. Access — Ability to Record Sounds Without Internet Access

Low Tech. Access — No Technology Access
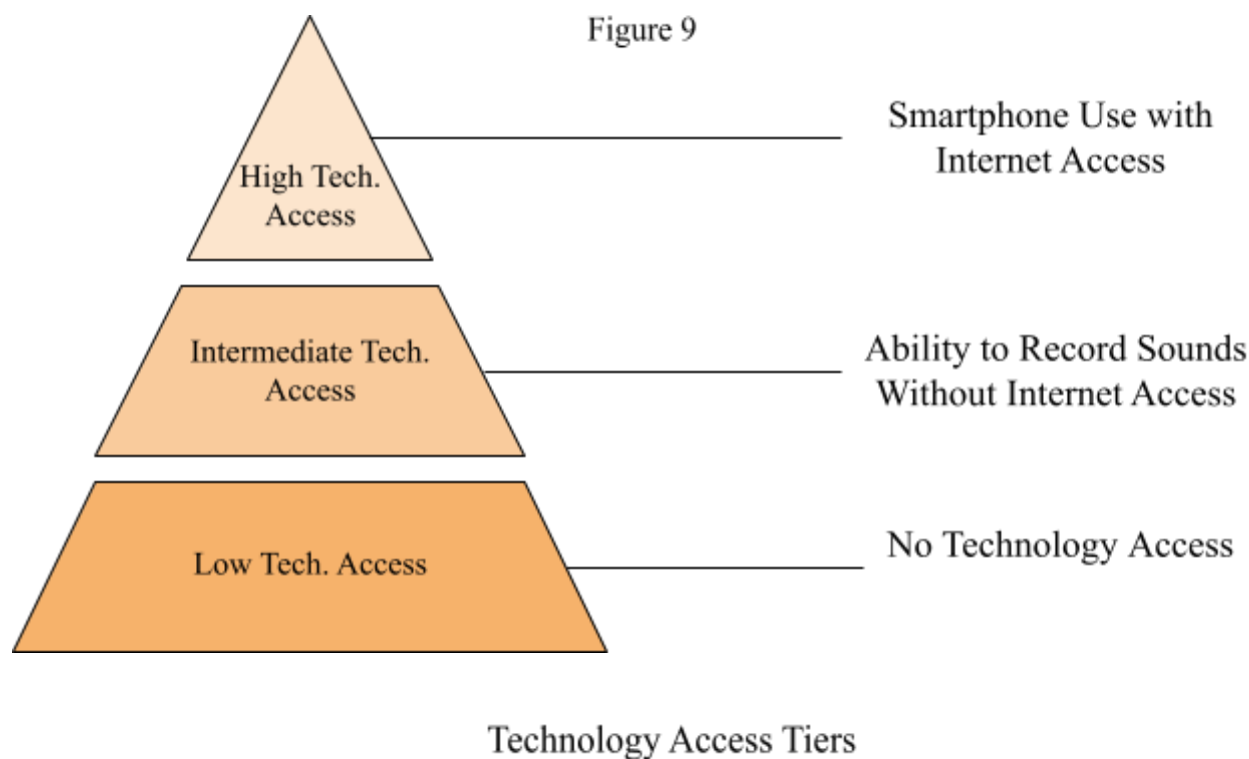
4.3 Recommendations for Inclusive Sound Collection Methods

Our research led to recommendations for the intermediate and lower technology access tiers. In Chapter 5, we discuss the implementation of a sound collection application, which is used in conjunction with some of the recommendations in this section.

4.3.1 Create a Physical Map

We consider the Android application to be the primary mode of participation in Studio Austen's upcoming *Jiu Valley Sounds* project. However, considering different levels of technology use and access (see 4.2.2), we recommend the creation of a physical alternative to the application. We recommend a physical map to increase accessibility for users without smartphone access or use. The map would cover areas of the valley with tagged sound discovery locations, determined at an initial workshop conducted by Studio Austen with high school

students. Additionally, the map would be displayed in local community centers, distributed by schools or libraries, and available for download on the *Jiu Valley Sounds* Facebook page. This map is intended to accompany those using recording methods other than the application outlined in section 5.2. Users may record sounds with equipment they have borrowed at community centers, libraries, or schools in combination with the physical map to locate key sound collection locations.

4.3.2 Establish a System for Lending Out Recording Devices

For the intermediate technology access tier, we determined that an equipment lending system based on remote workshop and soundwalk methods was the most suitable for our project. Multiple studies concluded that remote workshops and soundwalks are successful and efficient methods of sound collection (Aletta et al. 2019, Mitchell et al. 2020, Oberman et al. 2020). We decided to combine these two methods and create a procedure to accommodate intermediate technology access, whereby participants can borrow equipment and return it after they collect sounds. This system includes partnering with local community centers, libraries, and schools to lend out affordable and effective handheld field recording devices. These devices can be borrowed by citizens who do not have access to their own personal recording devices. Participants can conduct **individual soundwalks** using information from the Facebook page, which they may view from a public or private computer. This system fosters community involvement and increases the participant's stake in the project, which has been proven to increase the quality and quantity of project participation (Datta et. al., 2015).

4.3.3 Organize a Guided Soundwalk

To accommodate the lower technology tier, we are proposing a **guided soundwalk** that requires no personal technology access. Throughout the literature reviewed, soundwalks were consistently identified as successful methods for conducting sound collection because they provide a structure and purpose to sound collection efforts. Soundwalks allow participants to create meaningful attachments to sounds as they assess their surroundings (Aletta et al., 2019). The proposed soundwalks will be led by local environmental group volunteers or others familiar

with the landscape. First, participants will meet guides at a specified location. Next, they will walk a specified route, socially distanced, and collect sounds with the soundwalk guide's smartphone application. Finally, the guide will help participants upload sounds through the application, and the party will return to the starting location. The soundwalks can be advertised on Facebook, in schools and community centers, and in the local newspapers. This method is independent of technology access, therefore, it will increase engagement in *Jiu Valley Sounds*.

5. Prototype Smartphone Application for Sound Collection

We examined many different methods for remote Participatory Action Research (PAR) sound collection along with determining the technological context of the Jiu Valley. This informed our understanding of the most effective ways to implement remote PAR (Project Objective 1) and solidified our application development objective (Project Objective 2).

Figure 10

5.1 Designing a Sound Collection Application

We determined that a **basic sound collection application** is the most effective method to conduct remote PAR in the Jiu Valley. To begin application development, we held an **initial design session** to define the purpose, objectives, and features of the application. We determined that the purposes of the application are to encourage community engagement, to create a streamlined sound submission process, and to promote interaction between people and the environment. We agreed that the application's design would prioritize **ease of use and accessibility** so that a variety of users could interact with the submission stage of the project. To broaden our understanding of the user demographics, we created five user personas (see Appendix J) representing possible experiences in the Jiu Valley. Examples include a schoolteacher, a small business owner, a student, and a former miner; all of which had different motivations for engaging with the application and would be looking for slightly different experiences. These personas, combined with user stories (see Appendix K), helped to inform the features we included in the application.

5.2 Developing a Sound Collection Application

The main page of the application is the **map view** (Figure 11). This page includes interactive virtual markers. Once selected, these markers will provide a pop-up displaying the
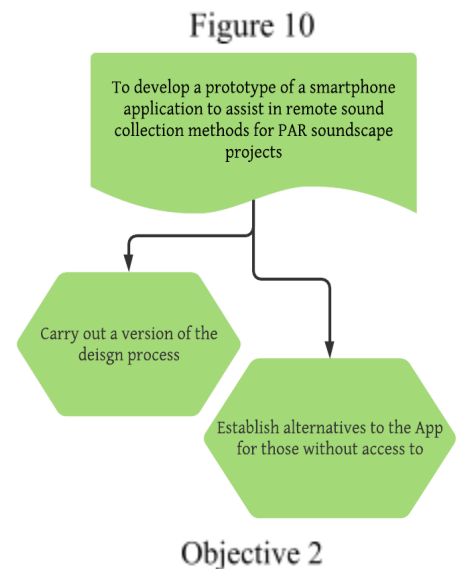
name of the marker location. Further interaction with this pop-up will direct the user to a new screen containing a sound submission field and a description of the location (Figure 15). In addition, by selecting the Google Maps icon, directions to the location will automatically open.

Figure 11

Figure 12

Map with Virtual Markers
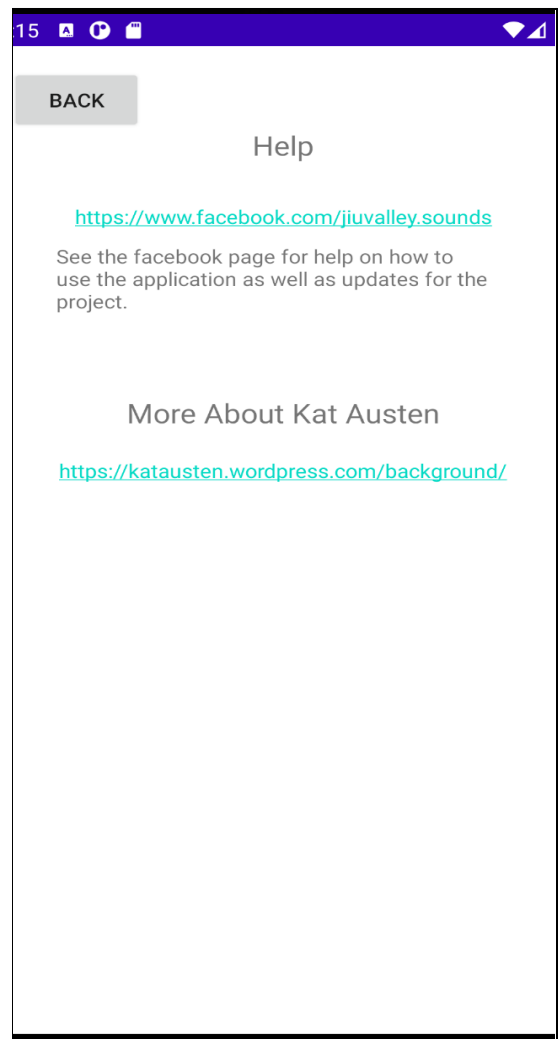
Help Page

The help button (represented by a lowercase 'i') is located in the top right corner of the map view (Figure 11), and navigates to the help page. The **help page** (Figure 12) will contain instructions for using the application, relevant contact information, and redirection links to the *Jiu Valley Sounds* Facebook page.

The **menu page** includes a "Submit Sound" button, a "Submit New Location" button, and an "Admin Login" button. The "Submit Sound" button directs users to the sound submission page (Figure 14). The "Submit New Location" button directs users to the **location submission page** (Figure 16).

Figure 13
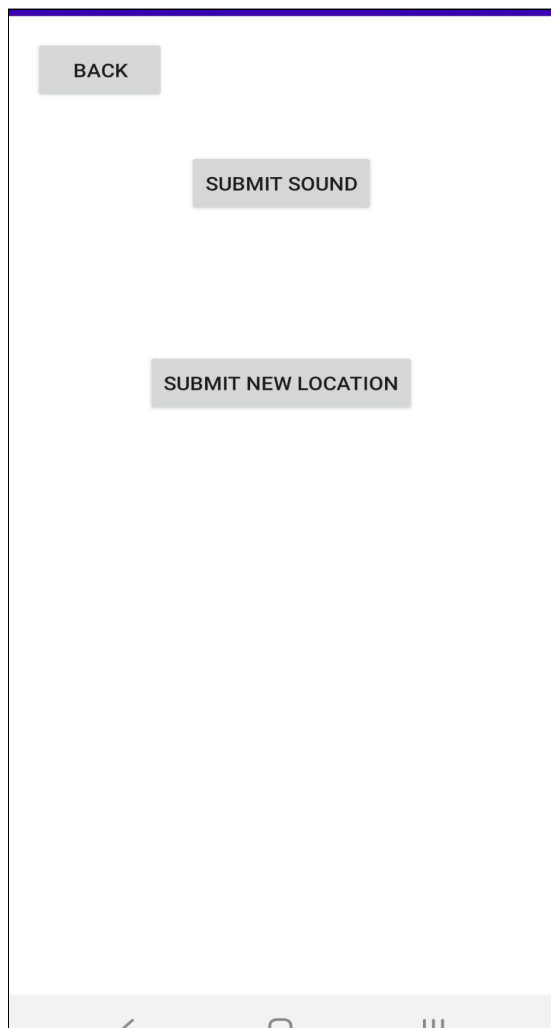
Figure 14

Menu Page
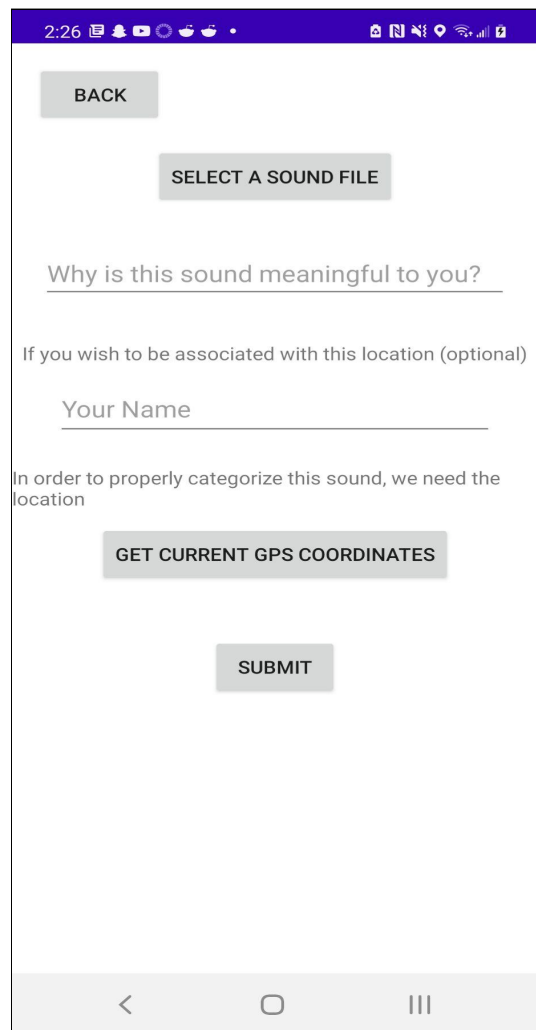
Sound Submission Page

The **sound submission page** (Figure 14) allows users to upload a sound file, add a description of the sound, add a name if desired, and add the GPS location of the sound. Once submitted, the sound is uploaded to the Zenodo database for Studio Austen.

The **submit location page** (Figure 16) allows users to propose a waypoint to add to the map. This page includes fields for the location name, the user's name (which is optional), a brief description of the location, and the GPS coordinates of the location. To include the GPS coordinates, the user must be standing at the location while submitting the waypoint. Once submitted, location will be uploaded to Zenodo where Studio Austen can review and accept additional locations for the map. Once accepted, the waypoints will automatically populate the application's map for all users.

Figure 15   Figure 16

Location-Specific Submission

Submit New Location Page

5.3 Recommendations for *Jiu Valley Sounds* Application

While the team succeeded in creating an efficient, functioning prototype of a sound collection application, we recognize that there are some steps we cannot take to ensure the application's **lasting function**. Therefore, we have made an **application development booklet** complete with design process specifications like application objectives, user stories, and application features. An example of an application design page can be seen in Appendix L.

Figure 17

App Booklet Cover Page

The booklet also includes the pertinent information needed to **maintain the application** once the project is passed on to Austen and her team. Because *Jiu Valley Sounds* will take place in Romania, some participants may not speak or read English. Therefore, we recommend **translating** the application to Romanian. This requires minimal coding within the application, and all directions relating to this process are described in the application booklet under "Application Maintenance". An example of this page can be found in Appendix L.

The final recommendation for the *Jiu Valley Sounds* application is to **publish the application** on the Google Play Store so it is accessible to all participants in the Jiu Valley. Because of the time constraints, the team did not publish the application to the Google Play Store, however, we left detailed instructions describing how to carry out this process in the application booklet (see Appendix L). A major step in publishing applications is developing the **listing content**. This includes a short and long summary describing the application, catchy graphics, and the correct categorization of the app. We recommend ensuring that the short summary is catchy, succinct, and informational, while the long summary delves into the details

of the application's different features. We also recommend categorizing the application as accurately as possible to decrease the likelihood that it is taken down. The categories we recommend are:

- Art and Design
- Education
- Maps and Navigation
- Social

These categories cover a wide variety of interests which will attract more traffic and decrease the chances that the application is incorrectly categorized. More detailed listing recommendations can be found in Appendix L and the application booklet.

6. Outreach Strategies for *Jiu Valley Sounds*

We created a **network of contacts** in the Jiu Valley and made recommendations on how to use that network. The focus of this network was to contact people who can assist with implementing *Jiu Valley Sounds*. The language barrier between Studio Austen and those in the valley, paired with the COVID-19 pandemic, emphasized the need for active contacts and participants. We used the network of contacts to establish background information on the Jiu Valley, to fill roles needed to implement *Jiu Valley Sounds*, and to promote the project through social media.

Figure 18

To create and manage a network for rural communities to promote engagement through outreach and workshops

Create a plan to run Inital and education workshops

Create an organized network for Studio Austen to use to promote the project and fulfill necessary project roles

Objective 3

This section contains background, methodology, results, and recommendations. To aid Kat Austen in the implementation of *Jiu Valley Sounds,* we carried out specific methods tailored to the Jiu Valley region. Recommendations on how to continue this outreach can be found in section 6.3.

6.1 Designing Outreach Strategies for the Jiu Valley

The goal of this objective was to **create and manage a network** to promote engagement. We fulfilled this by considering the assessment of technological use in the valley (4.1.3) to differentiate between accessible and preferred methods of communication. We added to the list of previously established contacts using the **snowball effect** to grow the project's network. We gauged initial workshop interest and raised awareness for Participatory Action Research (PAR) workshops**.** The last component of this objective was to use the network to **fill various roles** for *Jiu Valley Sounds* beginning in October, 2021.

6.1.1 Generating a Network of Contacts

We began by reaching out to **schools, universities, and contacts** previously established by Studio Austen. We searched for key informants in the community to initiate a snowball effect.
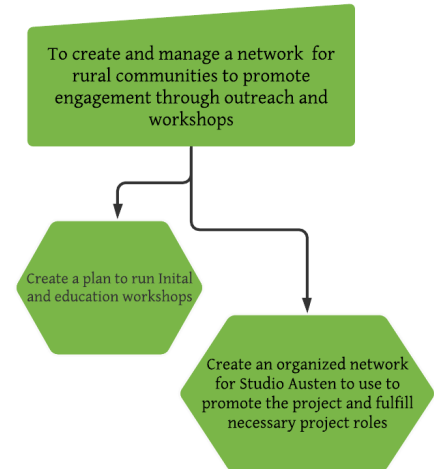
These key informants have an **impact on their community** and can **recruit others** to attend workshops and submit sounds. We also browsed local Facebook pages, and reached out to community members over Facebook Messenger to create new branches in the network of contacts. We utilized a color-coded spreadsheet to organize the contacts' information to allow for readability. All relevant information is linked or included in the spreadsheet to ensure a seamless transfer of communication between us and Studio Austen.We also created a tree diagram to visualize these contacts (Figure 19). The green bubbles indicate active contacts, the yellow bubbles indicate recommended contacts, and the yellow bubbles with a green outline indicate contacts that have participated in past correspondence.

Another purpose of this network is to **fill project roles**. Various roles that would help remotely implement the *Jiu Valley Sounds* project include:

- An initial workshop group
- High school teachers for student classroom workshops
- Translators
- Guides for the guided soundwalks
- Someone to take over application development and maintenance

We determined which contacts to reach out to for specific project roles based on the information included in the contact spreadsheet. We sent personalized and well-researched emails to increase chances of a reply. For example, to find someone to manage the application, we reached out to a teacher of information technology at a school that has a large technical program. In the *Jiu Valley Sounds* outreach recommendation section (see 6.3), we proposed methods for **promoting the application and workshops** using this network.

Figure 19

Contact Tree
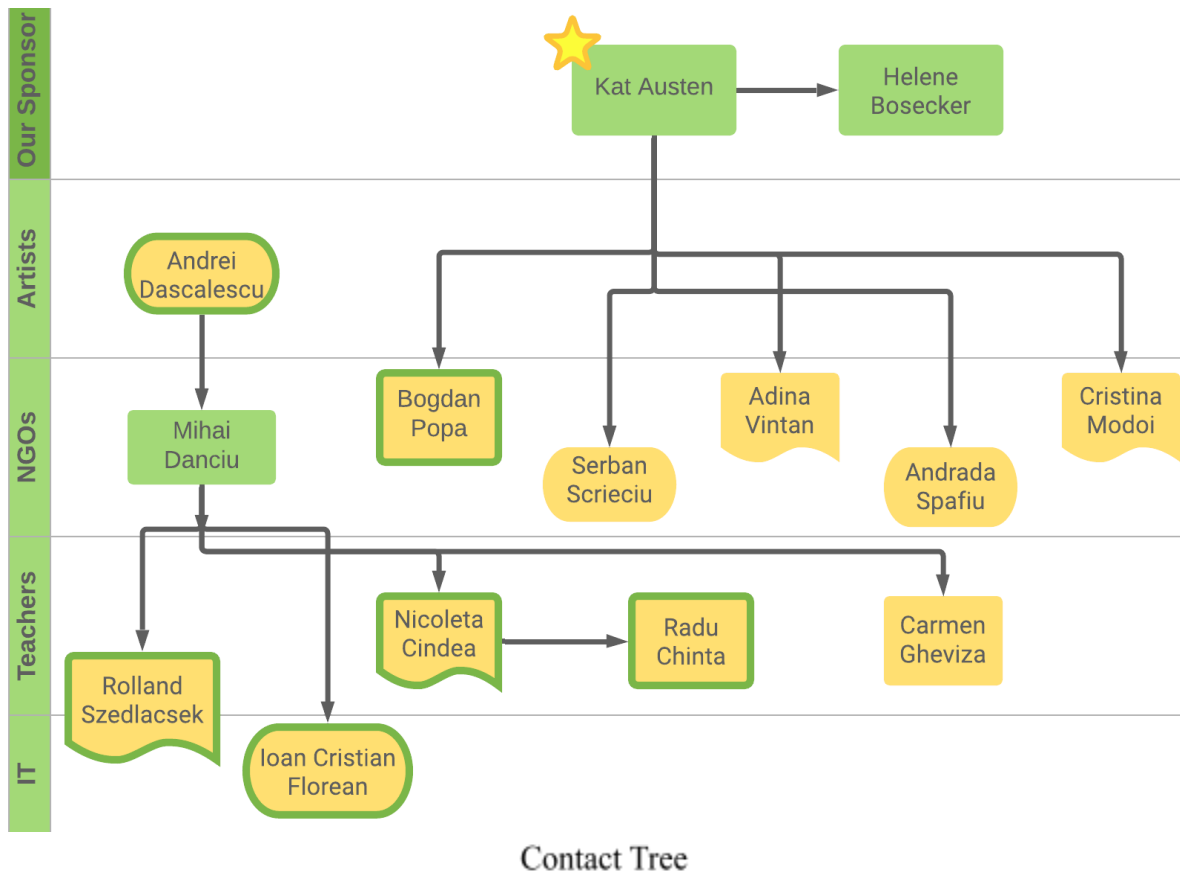
6.1.2 Organizing PAR Workshops

Workshops are an important tool in PAR projects because they **emphasize the importance of community involvement**. These workshops add an educational perspective as Austen prompts thoughtful conversation about topics like climate change. The agenda and content of these workshops will remain in the hands of Austen, however, we prepared for an **initial teacher-led, classroom style workshop** with high school students. This preparation included finding **willing participants and hosts**. We reached out to high school teachers, art departments, and student groups from local universities with Facebook presences.

6.2 Outcomes of Jiu Valley Outreach

The results of this objective utilize the contact network to increase project participation. The contact spreadsheet tracks the results of our outreach and will be referenced in the recommendations. Out of the more than 50 individuals we contacted, we received five responses.

6.2.1 Contact Spreadsheet

We created a spreadsheet to organize the network of contacts in the Jiu Valley (see Appendix M). The spreadsheet includes columns containing **names, descriptions, roles in the project, and contact information** like a Facebook profile, email, or WhatsApp. The information in these columns helps us communicate with each contact effectively and request what we need while remaining polite and professional. The final column includes comments and links to any correspondence that is beneficial for communication. The spreadsheet is color coded by type of contact into three categories: **Active**, **Inactive**, and **Recommended**. Active contacts, colored green, are those that have been responsive, and are actively helping implement *Jiu Valley Sounds*. Inactive contacts, colored orange, are those who have been helpful but are not actively aiding in the implementation of the project. Recommended contacts, colored blue, are those who we did not reach out to, however, we have determined they could be helpful with *Jiu Valley Sounds*.

6.2.2 Facebook Page

We created a Facebook page to post short project descriptions and additional information about *Jiu Valley Sounds*. People can look to the Facebook page for project and mobile application information. The application has a help button that links to the Facebook page. The page is a place to post example sounds, user tutorials, or anything else that can help make the application more accessible. The Facebook page will also serve as a place where people can communicate with Kat Austen and each other, creating a community for the project where

Austen could even hold a Facebook Live interaction. The page provides an account under which we can join local Facebook groups to continue to grow the network and promote the project.

Figure 20
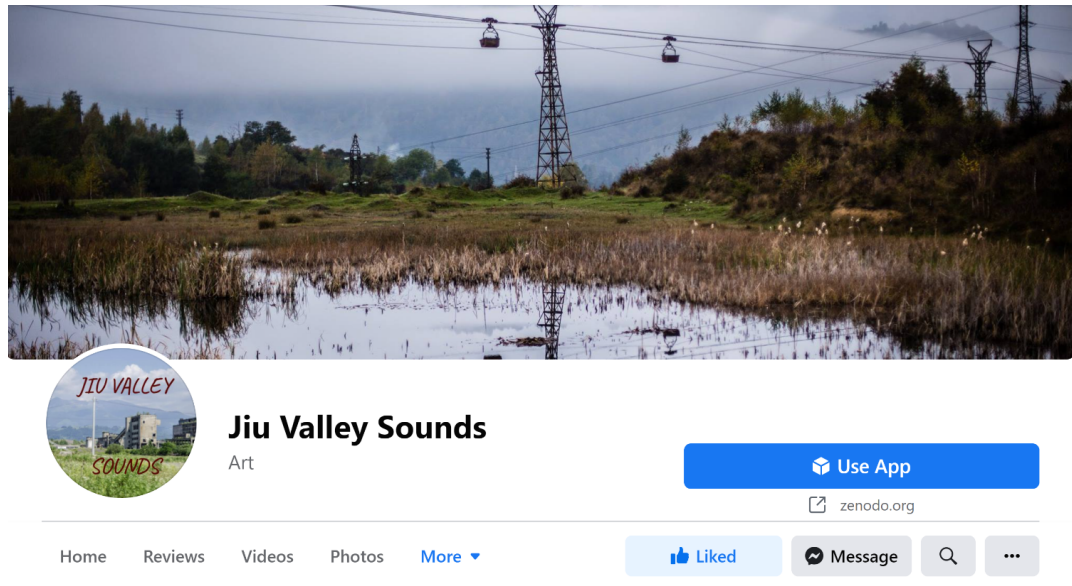
Screenshot of the *Jiu Valley Sounds* Facebook Page

The Facebook page accounts for users in the intermediate technology access tier during the sound collection phase. We created a space for **file uploads** on the *Jiu Valley Sounds* Facebook page. Users who collected sounds with recording equipment are able to upload their recorded sounds directly to Studio Austen's Zenodo database through a direct upload link, provided they have access to personal or public computers.

6.3 Recommendations for *Jiu Valley Sounds* Outreach

This section makes recommendations to continue to fill roles and promote the project in the Jiu Valley. Additional contact information has a row in the contact spreadsheet. In the

following section, the number of the spreadsheet row is written in parentheses after the name of the contact.

6.3.1 Recommendations for Filling Project Roles

We recommend that Studio Austen run a **remote workshop with local high school students**. This workshop will focus on teaching students about soundscapes, environmental art, and will introduce sound collection methods as a way to interact with and learn about the environment. During this workshop, these students will tag initial points in the *Jiu Valley Sounds* application to create an initial path for sound collection for the general public. Populating the map view of the application prior to officially promoting the app will create a more community-driven experience, further motivating participants to contribute.

We reached out to teachers, Nicoleta Cindea (9) and Radu Chinta (10), who were responsive and willing to have a remote workshop performed in their classroom with the students. Cindea would be a useful initial contact, because she was very enthusiastic and responsive in her messages. To plan the content of the workshops, we recommend referring to the correspondence with Cindea, as she includes helpful information about her high school in Petrila.

While we have been lucky to reach many English-speaking residents of the valley, Romanian is the main language spoken. To reach as many people in the Jiu Valley as possible, it will be important to **translate** project materials. Therefore, we recommend filling this translator role using Bogdan Popa (13). Popa is part of an NGO in the Jiu Valley Coalition, which has a "group chat" mentioned by Mihai Danciu (8). This group contains 19 NGO members, and may contain someone willing to help.

We recommended the implementation of a **guided soundwalk** in Section 4.4.3. This recommendation requires volunteers familiar with the area who are capable of leading groups of participants. We recommend utilizing the NGO coalition and Facebook for filling the soundwalk guide role. **Facebook** is home to groups like the Jiu Valley Alpine Club (15), which are composed of those who are familiar with the Jiu Valley environment. We recommend beginning the search for a soundwalk guide as soon as possible because this was a challenge for our team.

Posts on larger pages like the public Facebook news group, NEWS PETROSANI (14), with 11,800 followers could also be helpful.

The application discussed in Chapter 5 will not undergo user testing by our team. To ensure that the application works well during implementation, we recommend that someone take over **application development and maintenance**. Our group reached out to Rolland Szedlacsek (11) and Ioan Cristian Florean (12), who are information technology teachers in the valley. We did not receive a response from either, but both were active on Facebook during our initial communication. We recommend reviewing our correspondence with them and following up through Facebook. Along with these two teachers, the Jiu Valley has recently become home to several robotics teams. Students and advisors on those teams may have applicable coding abilities or know of someone who does.

6.3.2 Recommendations for Promoting *Jiu Valley Sounds*

After roles that will assist in the project's implementation are filled, we recommend continuing to use the contact network and Facebook page to **promote the mobile application**. We recommend working with established contacts to grow the Facebook following. This will allow Facebook to be the primary place to advertise *Jiu Valley Sounds*. After publishing the application, we recommend posting a link to the Google Play Store in large Jiu Valley-based public Facebook groups for downloading convenience. To maintain involvement with the Facebook page, we recommend **posting regularly**. Some examples of posts include sample sounds and community member biographies, which would help the project maintain community interest and an online presence. Along with utilizing the Facebook page, we recommend using local contacts to find popular Jiu Valley newspapers to advertise in for those who do not have technology access.

7. Recommendations for Future Sound Collection Projects

We have created this chapter containing recommendations generalizing our methods and findings for future applications outside of the Jiu Valley.

Figure 21

Future Recommendations Overview

7.1 Conduct Background Research

We gathered extensive background research to inform the direction of our project objectives, how we approached constructing our deliverables, and most importantly, how we communicated with individuals in the Jiu Valley. We recommend conducting background research into regions of interest to develop a strong **cultural, historical, environmental, and technological context** for future projects. As a team, we conducted most of this preliminary research online, taking full advantage of journals, databases, online literature, and government statistics and reports. While this process provided us with a solid base of knowledge and cultural sensitivity for approaching individuals in the area, we were not able to gain insight into personal opinions regarding mine closures. We struggled to find region-specific data about technology use, communication methods, and cultural norms. To fill these gaps in our research, we **conducted interviews** with individuals in, or involved with, the Jiu Valley. Based on the success of these interviews, we highly recommend contacting relevant individuals and organizations in future regions of interest to learn about the opinions, motivations, and emotions of people who may become future project participants.

7.2 Identify Inclusive Engagement Strategies

While we have successfully developed the tiered technology-access model to increase participation in *Jiu Valley Sounds*, adjustments can be made to generalize this method for implementation elsewhere.

We utilized research by conducting interviews and a literature review to develop **three tiers of implementation**. We predominantly used Facebook to identify knowledgeable contacts to interview. Through interviews, we determined region-specific information like technology access, customs, cultural norms, and how to best access different groups of people within the valley. We used the snowball method to identify new contacts, and stayed connected with each contact. The information gathered from these interviews informed us on methods of sound collection that would be most practical in the Jiu Valley. It also helped determine the need for three technology access tiers to include more community members in the project.

Although this method was successful in the Jiu Valley, we recognize that meeting knowledgeable contacts through Facebook that are willing to recommend other useful connections may not be repeatable elsewhere. Therefore, we have thought of a few recommendations:

- Do not rely on common or obvious communication methods
- Understand the methods used to connect within the region
- Define at minimum, three technology access tiers

We learned that we could not rely on communication methods that seemed most useful and relevant to us. Prior to using Facebook, we attempted to correspond with relevant contacts at the University of Petrosani in the Jiu Valley via email. Out of the four emails we sent, we received no responses. We were unsure why our email method produced no results until we learned through an interview that email was an uncommon way to conduct business in the Jiu Valley. We learned that common methods of communication are unique to the region. Therefore, we recommend not assuming which methods will be most relevant.

Implementing this project requires understanding which communication platforms are **most popular** in the project region. One way this can be accomplished is by visiting

region-specific pages on different social media platforms. If there is a substantial amount of activity on a social media page, then that platform can be more heavily considered for use. While this method requires tedious social media monitoring, it is not region specific, and can therefore be conducted in many locations.

We recommend creating three technology access tiers regardless of the information obtained about the region or lack thereof. For *Jiu Valley Sounds*, three tiers of technology access allowed the team to prepare multiple sound collection methods that could **accommodate a wide variety of participants**. After creating the tiers, the team realized that determining the technology access of the Jiu Valley was less relevant. This is because the methods included in the tiers accommodated the common levels of technology access we encountered.

7.3 Establish Outreach Methods

In order to recommend methods of outreach for future soundscape projects, we utilized knowledge from our outreach experience for *Jiu Valley Sounds*, and made recommendations based on our successes and failures.

We recommend leveraging the **snowball method** in other projects. Contacts we received through this method were more responsive and willing to communicate with our group than those who had no prior knowledge of our project. The snowball method also helped us contact community members that speak English. Facebook's auto-translate feature makes it difficult to determine if someone speaks English, so utilizing known English-speaking contacts was useful.

We learned that not all outreach can be done using the snowball method, so we recommend monitoring popular social media platforms for active community members. We recommend doing basic research on the contact by looking through Facebook profiles, LinkedIn, or a Google search. Creating a personal message with specific requests increased the contacts' chance of responding. This form of outreach requires a lot of effort, but the contacts that can be obtained this way are crucial to the success of the project. We highly recommend devoting time to establish a useful network.

Our final recommendation for conducting outreach is to make sure that the contacts and information acquired during the process is **organized** and managed so it can be useful. Our team

successfully utilized a spreadsheet with numerous columns for organizing the *Jiu Valley Sounds* network. We also categorized the types of contacts and color coded them for readability. We recommend including as much information as possible because this will allow for effective communication later on.

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Appendix A: Sponsor Description

Studio Austen, composed of Berlin-based Dr. Kat Austen, exhibits a focus on environmental issues through artistic expression. Austen conducts extensive field research into affected environments that become the heart of her projects, blending scientific and multimedia methods to analyze the connection between art and social and environmental justice. Many of Austen's projects explore the intersection of environmental issues, such as climate change, and social culture and interaction. *Not Waving* uses social media as a medium to discuss and show the effect of social awareness on environmental issues. Likewise, *Navigable Borders, Don't Forget to Stop and Smell the Flowers, Strangers to the Trees,* and *Sound and Silence* all deal with various forms of human interaction and intervention with the environment (Austen, n. d.). Austen's 2018 work, *The Matter of the Soul,* concentrates on the idea of human empathy as it applies to the melting of the Arctic ecosystem. Austen explains that "providing people with more scientific information has been shown to have little effect on the degree to which people care about the climate or understand the impact of human activity", and that "something else is needed". In *The Matter of the Soul*, Austen created sound compositions that included recordings of "dying ice" captured during her research in the Canadian High Arctic (Austen, 2018). Overall, Austen's work is driven by the desire to communicate the relationship between human identity, culture, society, and empathy with the environment, all the while striving to communicate these ideas in new and effective ways.

Kat Austen, of Studio Austen, earned her PhD in Chemistry from University College London (UCL), where she lectures as a senior teaching fellow in science, art and multidisciplinary subjects. She is also a resident in the UCL Maths and Physical Sciences department. Austen is a part of the 2020 EMARE resident program at the WRO Art Center, Poland's institute working to promote, create, and teach multimedia art techniques while also offering participatory, educational and research projects. During her partnership with the Creative Europe Culture Programme of the European Union, Austen produced her most recently completed project, *Stranger to the Trees.* The mixed media project addresses microplastics in the environment using text, sound, video and illustration (IASS, n.d.). Some of her other partnerships include her fellowship at the Institute for Advanced Sustainability Studies and the fellowship program based in Potsdam, Germany, where the institute provided access to research so she could further her work including environmental issues into her art. Austen has held residencies around the globe, including the Cultural Institute, University of Leeds, first ever cultural fellow in art and science. Along with her many residencies, Austen is also a writer whose articles are an intersection of technical science and personal interpretation and art. Her work, featured in both peer-reviewed journals and magazines such as *The Guardian*, are another

place where Austen has creatively mixed arts and sciences to explain and discuss the complexity of the environment (ResearchGate, n.d.).
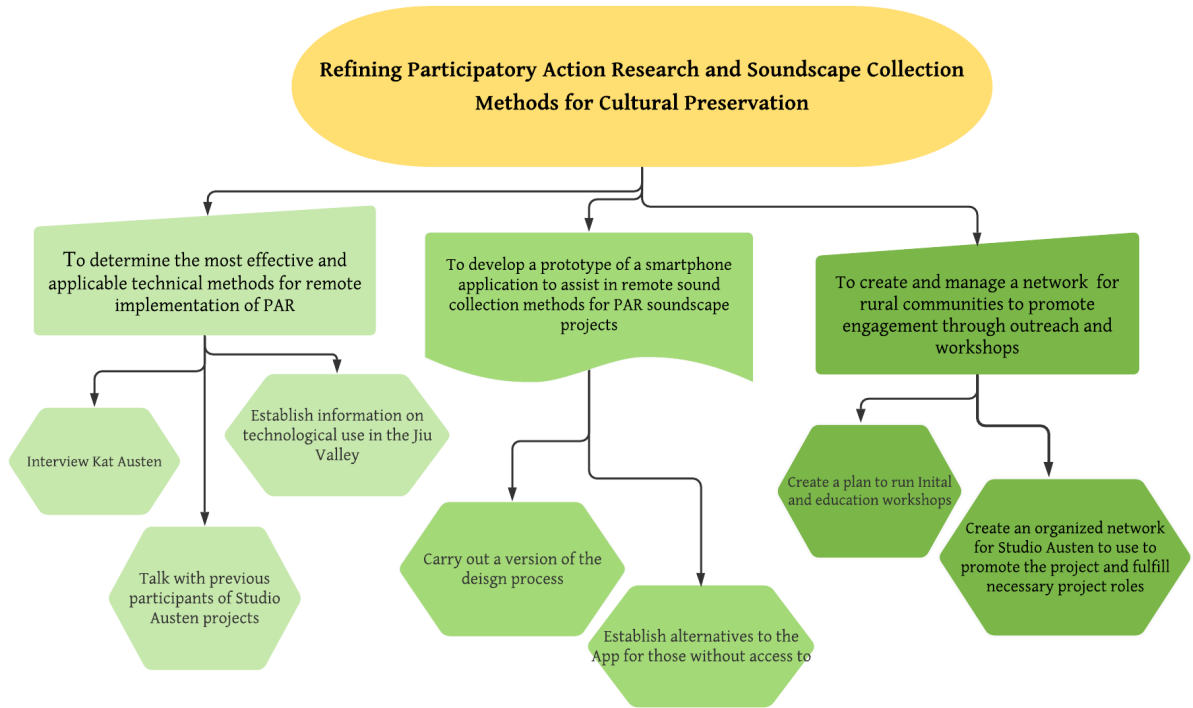
On her website, Austen has been tracking her partnerships, performances, reviews and projects since 2007. The types of projects Austen does are sometimes highly research based, like *The Beetles' Harvest Supper,* a performance from 2019 that highlights the insect ecosystem while also using alchemy to summon beetle spirits. Some of the tags that Austen uses to categorize her own work are helpful to get a sense of the work she does and how she views her own work. Some of those tags include: performance, participatory, climate change, exhibition, sound, co-creation, nature, sculpture, sound, social justice, environmental justice, and microplastics (Austen, 2020). For all of these projects, Austen uses her technical research practices in combination with her passion for the environment to create the art that she displays. Austen also teaches workshops on her unique artistic research methods, such as her crowdsourcing technology, which is something our group in particular will be working with.

Studio Austen's budget consists of grants given from the EMAP/EMARE residency program in addition to funding from the other residencies Austen is participating in. Since participating in the EMAP/EMARE residency, Austen has been given a grant of 3000 euros, a project budget of 4000 euros, and travel expenses covered up to 500 euros (EMAP, 2020). As far as clients served, the project is being funded by the Institute of Advanced Sustainability Studies Potsdam, and therefore could be considered the client. Since the project is art with the goal of raising awareness, the Lusatian people could also be considered the clients.

Capturing the soundscape of remote regions like Lusatia conveys the relationship between man and nature. The connections between the environment and what it means to its inhabitants is important to capture because it directly influences sustainability practices in a region (Austen, 2020). It is important to Studio Austen to preserve the sound, feelings, and atmosphere of changing environments so that the relationship between humans and their experiment to live sustainably can be better understood (Austen, n.d.).

The mission of Studio Austen is to explore effective ways to foster social and environmental justice (Austen, n.d.). Through the *This Land is Not Mine* project, Studio Austen explores the relationship between humans, their identity, and the environment in relation to sustainable living. By capturing the soundscape of regions evolving towards more sustainable ways of life, Studio Austen hopes to examine how this transition impacts residents of these regions and aims to understand the dynamic relationships between nature and man (Austen, 2020).

Appendix B: Methods Graphic

Refining Participatory Action Research and Soundscape Collection Methods for Cultural Preservation

To determine the most effective and applicable technical methods for remote implementation of PAR

To develop a prototype of a smartphone application to assist in remote sound collection methods for PAR soundscape projects

To create and manage a network for rural communities to promote engagement through outreach and workshops

Interview Kat Austen

Establish information on technological use in the Jiu Valley

Talk with previous participants of Studio Austen projects

Carry out a version of the deisgn process

Establish alternatives to the App for those without access to

Create a plan to run Inital and education workshops

Create an organized network for Studio Austen to use to promote the project and fulfill necessary project roles

Appendix C: Kat Austen Interview

Interview Intro:

Thank you for taking the time to meet with us today. This interview should take roughly 15 minutes, but we can talk for as long as you'd like if you have a lot to share. Some areas of this interview may sound scripted, so we apologize if this sounds like we are reading.

We intended to record this interview so that your responses can be transcribed and analyzed, and we would like to include quotes from your responses in our research. We will also be taking notes as we go. Is it ok if we record so can we use quotes in our research?
- If so, would you prefer if we use your name, a title, or would you like to remain anonymous?

[IF YES: CLICK RECORD. IF NO: DO NOT RECORD.]

As a reminder, we have started the recording, and will use your name based on your preference. Before we start, do you have any questions?

Interview Questions:

1. What kind of turn out do you consider successful/what quantity are you looking for to have enough material for the composition phase of the project?
2. When doing workshops, how did you typically reach out pre-covid?
3. What kind of turn out have you received from the different types of workshops?
4. Do you collect information from participants, emails, contact information?
5. Are there any follow up connections established through these workshops that would allow us to understand from the participants perspective?(sending a survey via email?)
6. Have you tried to run any workshops since things switched to virtual?
   a. What were the results of that?
   b. Main takeaways?
7. Which of your PAR projects do you consider most successful and why?
   a. Least successful?

Interview Transcript:

Appendix D: Jiu Valley Expert Interview (Mihai Danciu)

Interview Intro:

Thank you for taking the time to meet with us today.

We are a student group from WPI in Worcester, Mass. We are working on a project for a Berlin based artist named Kat Austen. Her work focuses on preserving culture and creating awareness about climate change through environmental art projects. Currently, we are working on planning a remote participatory action research project based in the Jiu Valley. Kat is currently focusing on mining regions who have endured change throughout recent years. She intends to collect sounds throughout the Jiu Valley by either conducting remote workshops or through other collection methods to document the changing landscape and culture of the Jiu Valley. We plan to create an efficient, workable remote collection method and would love some insight about the Jiu Valley.

We will be taking notes as we go. Is it ok if we record so can we use quotes in our research?
- If so, would you prefer if we use your name, a title, or would you like to remain anonymous?

[IF YES: CLICK RECORD. IF NO: DO NOT RECORD.]

As a reminder, we have started the recording, and will use your name based on your preference. Before we start, do you have any questions?

Questions:

Planeta Petrila Background:
1. What is the mission of Planeta Petrila?
   a. We've seen the film *Planeta Petrila* and spoken to Andrei, so we have some context for what was happening during filming. How does Planeta Petrila continue or expand on this work?
2. How many people are involved in the work at your organization?
   a. Do you have any sense of what motivates the people you work with?
3. What community events has Planeta Petrila conducted in the past?
   a. What are some future events?

Responsibilities at the NGO:

1. What are your responsibilities at the NGO? - Do you have any personal connections to the Jiu Valley and the miners, or was it the film that drew you into the work?

<u>Outsider Outreach:</u>
1. How do you raise awareness/run workshops/run community events?
2. We are doing a project that focuses around preserving the culture of the Jiu Valley through an artistic soundscape project. In order to be successful in this project we need the participation of the people that are being affected. What would be the best way to get into contact with the general public in the Jiu Valley?
   a. Facebook?
   b. Phone calls?
   c. Flyers?
3. One thing that is crucial to the project is the collection of sounds that have significant meaning to the people in the Valley. We have been brainstorming a couple of different ways that this can be accomplished and were wondering if you would be willing to give your opinion?
   a. Sound walk
   b. App collection
   c. Website submission
   d. Other
4. How do you think the people in the Valley will receive our project? Do you think they will be willing to help, or hesitant?
5. From what we understand there are several cultural minorities in the Valley (the Momarlani people, for example). As a part of our project we want to make an effort to include them. Do you know anything about these groups, ways to get in contact, or resources you might recommend to us?

Interview Transcript:

Appendix E: Jiu Valley Expert Interview (Andrei Dascalescu)

Main artist- Ion Barbu

https://beyond-coal.eu/2018/12/03/citizens-beyond-coal-ion-barbu/#:~:text=Ion%20Barbu%20was%20born%20and,to%20murals%20and%20urban%20art.
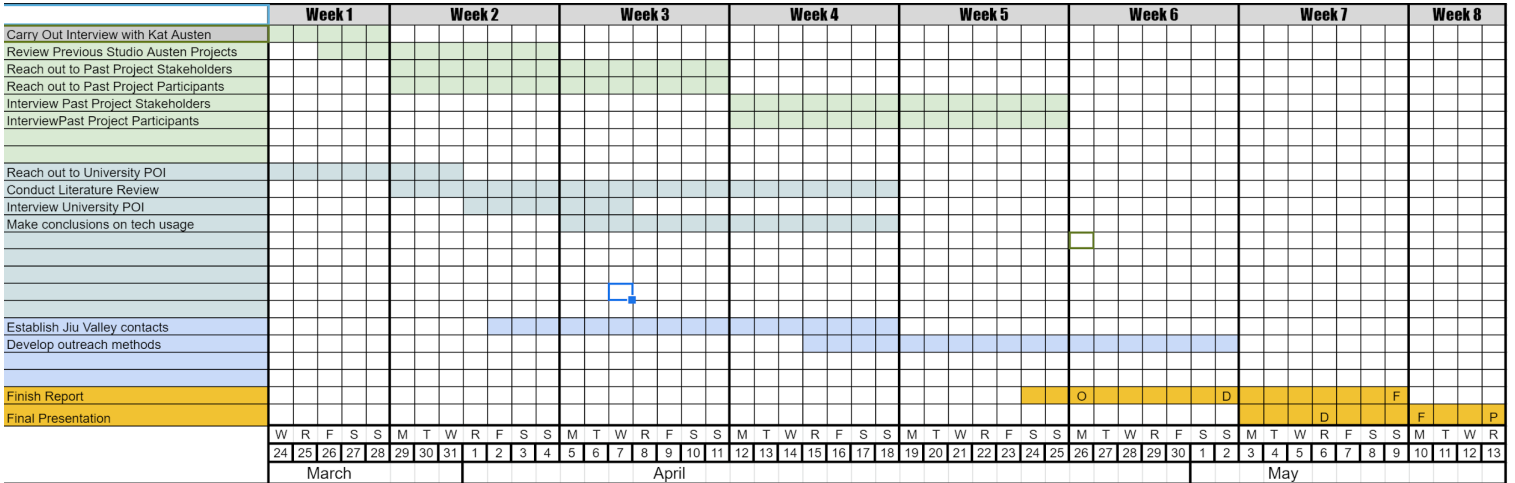
Talking points about the movie:
- I read an interview with you from back when the movie came out and it said you knew Ion Barbu already and I'm wondering how you got to know someone like that and what he was like to have two creative minds working on this emotionally charged film.
- Interesting how different the research we conducted was from what your film showed.
    - The information I found was that according to the EU the energy transition was expected to be very difficult for these mining places but they planned for it and the money was going to be helping the people.
- As we were watching we were curious over what span of time you spent filming in the Jiu Valley, or about how into your stay were the mines closed completely?
    - Did you visit other areas in addition to Petrila during the development of your work?
- What roadblocks or obstacles did you face while filming and planning the production?

Things we want:
- Contacts, don't jump right to it but we want to see if he still has a connection to or contacts in Jiu valley or the Art Community in Petrila.
- We could also ask about what he is currently doing, and if it is related to art or romania at all, we could ask if he would be willing to promote Kat's project!
- We also want to know about the technology use and how to reach out to people to participate in the project. Obviously it is going to be different

Appendix F: Gantt Chart

Task	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Carry Out Interview with Kat Austen								
Review Previous Studio Austen Projects								
Reach out to Past Project Stakeholders								
Reach out to Past Project Participants								
Interview Past Project Stakeholders								
InterviewPast Project Participants								
Reach out to University POI								
Conduct Literature Review								
Interview University POI								
Make conclusions on tech usage								
Establish Jiu Valley contacts								
Develop outreach methods								
Finish Report					O	D	F	
Final Presentation						D	F	P

W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R	F	S	S	M	T	W	R
24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13

March   April   May

Appendix G: Literature Review Graphic
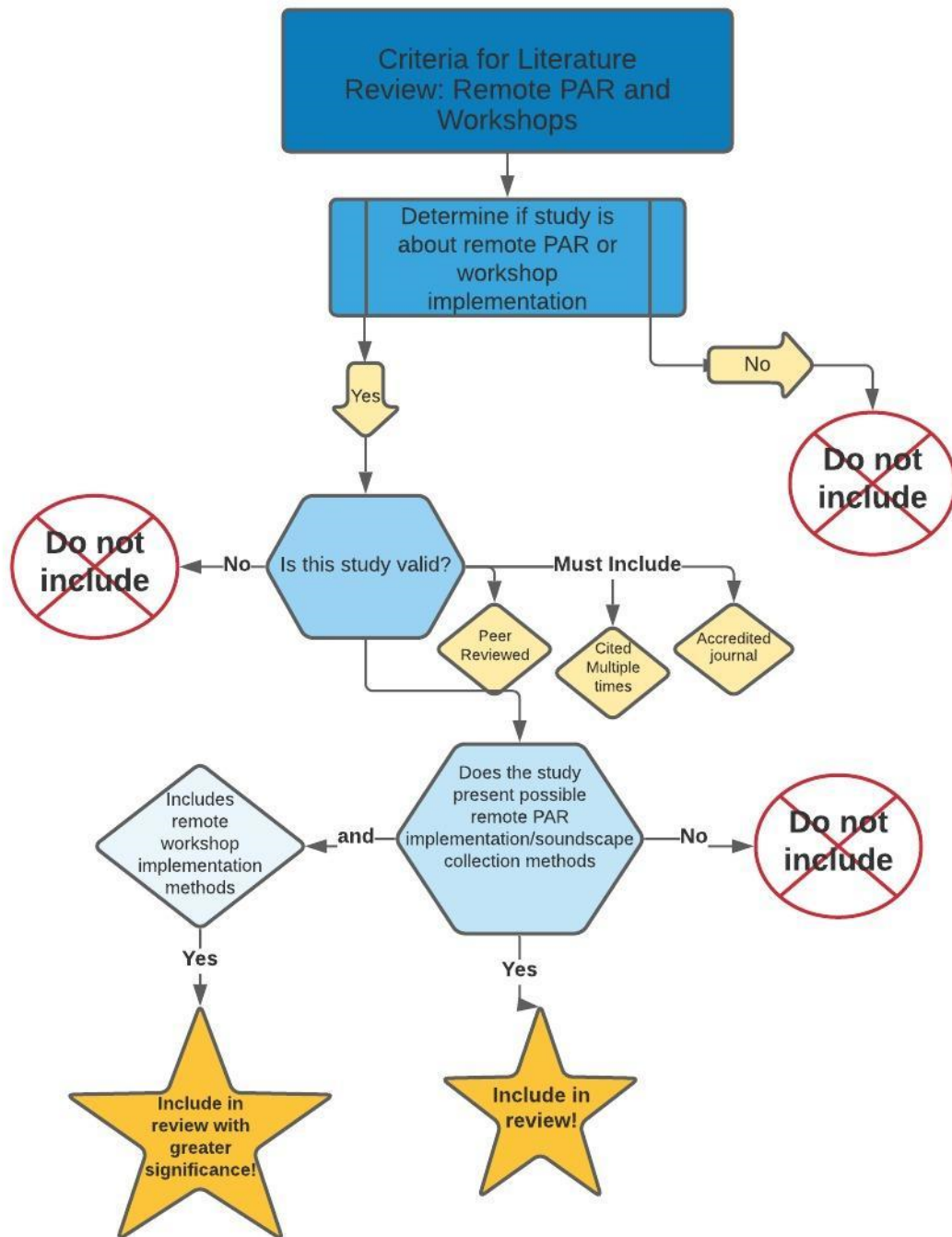
Appendix H: Literature Review Summation

Title	Year	Keywords	Main Methods	Relevance
Using social network theory to explore a participatory action research collaboration through social media	2020	- Thoughtful Implementation - Technology as a Tool	Used a personalized, familiar app to facilitate PAR projects.	
Toward Digital, Critical, Participatory Action Research: Lessons from the #Barrio Proj	2014	- Website - Cultural Preservation	Used a central website to facilitate projects, used community centers for outreach.	
SoundSense: scalable sound sensing for people-centric applications on mobile phones	2009	- Sound Collection - User Privacy	Described the user experience with SoundSense; a sound collection application.	
Participatory Action Research With Older Adults: Key Principles in Practice	2009	- PAR - Photovoice	PAR focused on elderly people; involved the community with research and had participants take photos to discuss (photovoice). This increased interest and participation.	
e-PAR: Using technology and	2008	- e-PAR	Used technology to facilitate PAR among	

participatory action research to engage youth in health promotion		- Photovoice	youth. Leading youth researchers involved participants, and a photovoice methodology was implemented successfully depending on the skill of the leading youth researchers.	
What is soundscape ecology? An introduction and overview of an emerging new science	2011	- Soundscape Ecology - Acoustic Ecology	Gives insight to sound collection. Some sounds are seasonal, some are man-made or nature-made. High quality sound files are very large. Discussed major sound synthesizing activities.	
Indigenous Ways of Knowing: Implications for Participatory Research and Community.	2008	- Participatory Action Research - Culturally Appropriate Research Design	Discussed better PAR methods in indigenous communities. Ways include making PAR more common, providing benefits to the community, involving the community in research so they see value and are comfortable with the procedure, results, and change.	

Getting participants' voices heard: using mobile, participant led, sound‑based methods to explore place‑making	2017	- Soundwalking - Place-Making - Participant Based Sound Collection	Multiple methods were proposed. They include: soundwalking, on the go interviews, and shadow walks.	
Crowdsourcing of environmental noise map using calibrated smartphones	2020	- Sound Collection - Cultural Preservation - Noise Maps	Graduate students were asked to calibrate smartphones, record environmental noise, and perform noise analysis within an application.	
An Approach for Modeling Affective Acoustic Ecology in City Environments	N/A	- Affective Acoustic Ecology	Explored the relationship between acoustic ecologies and emotion by analyzing previous work.	
Creative and Arts-Based Research Methods in Academic Research. Lessons from a Participatory Research Project in the Netherlands	2018	- Arts-Based Research Methods - Participatory Research - Community Resilience	Studied a dutch village and used creative and arts-based methods for participatory research projects to engage village inhabitants with their community and to increase community resilience.	

Classification of soundscapes of urban public open spaces	2019	- Soundscapes - Classification - Urban Space	Utilized virtual reality technology to immerse participants in a soundscape. Then, participants were asked to classify sounds by a questionnaire. They found that hierarchical sound classification was the most beneficial.	
Linking ecological condition and the soundscape in fragmented Australian forests	2014	- Biophony - Geophony - Anthrophony - Acoustic Diversity	This study employed Song Meter SM2 recording devices to make acoustic measurements. These devices can be left in place for a month, and the sounds picked up can be transferred via .WAV format to a remote location.	
Bees, Extinction and Ambient Soundscapes: An Exploratory Environmental Communication Workshop	2019	- Participatory Action Research - Soundscapes - Communication Workshop	An in-person workshop that was publicized through academic and public platforms was used. A soundscape activity was conducted during this workshop along with a seminar. Discussion about soundscapes and participant experiences	

			also proved to be useful.	
The Soundscape Indices (SSID) Protocol: A Method for Urban Soundscape Surveys—Questionnaires with Acoustical and Contextual Information	2020	- Soundscapes - Data Collection - Acoustic Surveying	Simultaneous questionnaires and sound collection were used. Questionnaires contained demographic, Likert, and WHO-5 index information along with soundscape information.	
Exploring the compatibility of "Method A" and "Method B" data collection protocols reported in the ISO/TS 12913-2:2018 for urban soundscape via a soundwalk.	2019	- Soundwalk - Acoustic Measurements - Acoustic Questionnaires	The most effective methods found were questionnaires and soundwalks.	
Experience sampling: Assessing urban soundscapes using in-situ participatory methods	2017	- Smartphone Technology - Crowdsourcing - Environmental Sounds	A sound crowdsourcing app called *Think About Sound* was created and used throughout Europe, the USA, and other locations. Mobile technology was found to be effective and meaningful because user interfaces were	

			mobile, easy to use, and easy to understand.	
Using Virtual Soundwalk Approach for Assessing Sound Art Soundscape Interventions in Public Spaces	2017	- Soundwalk - Soundscape Interventions	A soundwalk was conducted via pre-determined collection points based on walking distance. Lab participants mediated sound submissions.	
Musical Cities: Listening to Urban Design and Planning, Chapter 2: Listening to urban rhythm	2020	- Conscious Processing - Ecological Listening - Musical Listening - Semantic Listening	Describes urban soundscapes and the layers that accompany sound submissions. Depicts the different levels of sounds encountered and describes how these levels impact musical compositions.	

Least Relevant   Most Relevant

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Appendix I: PAR Sound Collection Methods per Tier
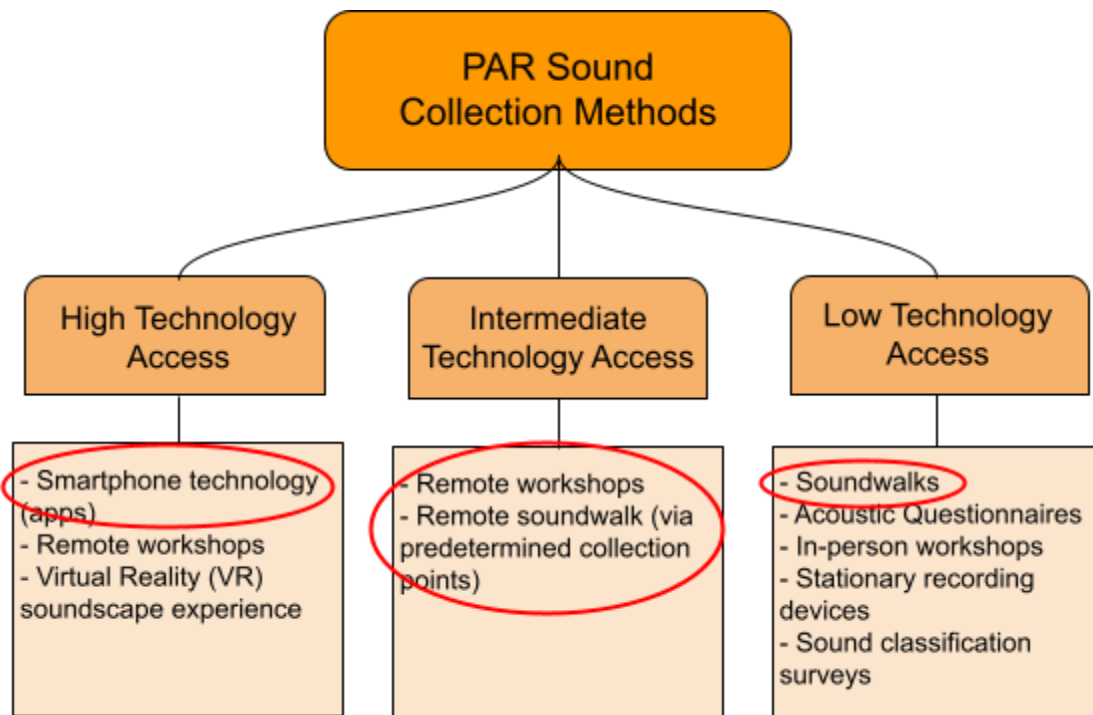
*Red circles indicate the options we chose for our sound collection project.

Appendix J: User Personas

Nicoleta the NGO Member

Age: 30
Work: NGO/Community Work
Family: Married
Location: Vulcan, Romania

Goals
- Preserve culture and heritage in the Jiu Valley
- Communicate the importance of industrial heritage
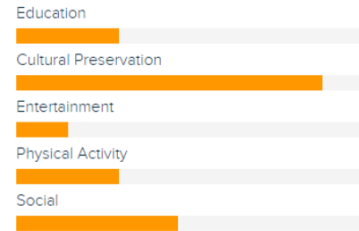- Involve the community and organize events

Frustrations
- Roadblocks from higher-ups
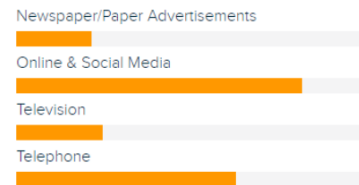- Lack of awareness from outside communities

Bio
Nicoleta is a member of an NGO working in the Jiu Valley. She is involved with planning and organizing community events centered around promoting cultural heritage in the area.

Motivation
- Education
- Cultural Preservation
- Entertainment
- Physical Activity
- Social

Preferred Outreach
- Newspaper/Paper Advertisements
- Online & Social Media
- Television
- Telephone

Yuri Younger

Age: 18
Work: Student
Family: Living with his Parents
Location: Petrosani, Romania

Goals
- Graduate School
- Obtain a Successful Career
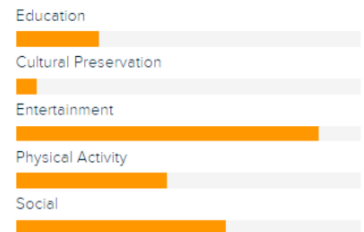- Figure out Life Plan

Frustrations
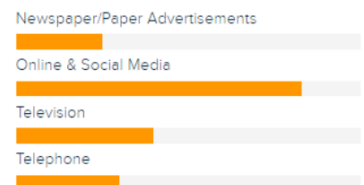- Lack of Career Options
- Too much focus on the old people

Bio
Yuri grew up as the son of a former miner. He doesn't want to go into mining, but instead wants a career in robotics. He first became interested in robotics through his school's FRC team.

Motivation
- Education
- Cultural Preservation
- Entertainment
- Physical Activity
- Social

Preferred Outreach
- Newspaper/Paper Advertisements
- Online & Social Media
- Television
- Telephone

Elena Baciu

Goals
- Provide for family
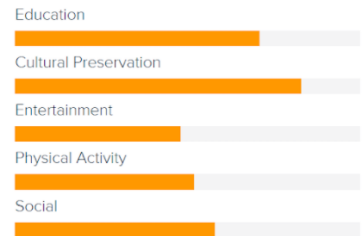- Help their community
- Teach kids about their home

Frustrations
- There is a lack of business in the Jiu Valley.
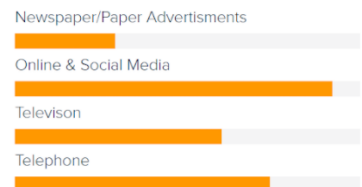- Dwindling community involvement is concerning.

Bio
Elena Baciu is a small business owner in the Jiu Valley. She heard of this project through Facebook. She has lived in the valley her whole life and feels a great sense of pride for her culture and heritage. Elena is very involved in the community and always jumps at the chance to participate in community events. She also feels strongly about ensuring that her childern understand their culture and loves to participate in educational events wtih her kids.

Age: 39
Work: Small Business Owner
Family: Married
Location: Petrila, Romania

Motivation
Education

Cultural Preservation

Entertainment

Physical Activity

Social

Preferred Outreach
Newspaper/Paper Advertments

Online & Social Media

Televison

Telephone

Adrian the Former Miner

Goals
- Educate others on industrial heritage in the valley
- Live life
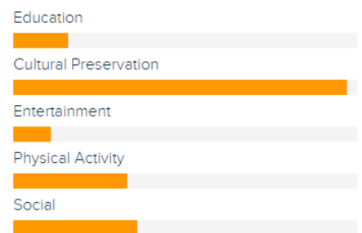- Ensure that there is no loss of community/identity

Frustrations
- Increasing loss of industrial identity
- Loss of work opportunities for current miners
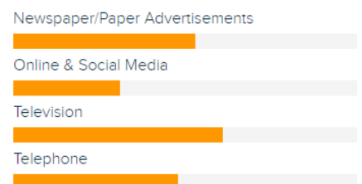- Lack of awareness from outside communities

Bio
Adrian is a retired miner who worked in a mine in Lupeni for 40 years. He is currently living off of retirement pension and uses his free time to get involved in community events. Adrian is concerned about the future of the identity of the area, and would like to see heritage be preserved.

Age: 72
Work: Retired Miner
Family: Nephew
Location: Lupeni, Romania

Motivation
Education

Cultural Preservation

Entertainment

Physical Activity

Social

Preferred Outreach
Newspaper/Paper Advertisements

Online & Social Media

Television

Telephone

Ms. Smith

Goals

- Save up money for a house
- Help their community
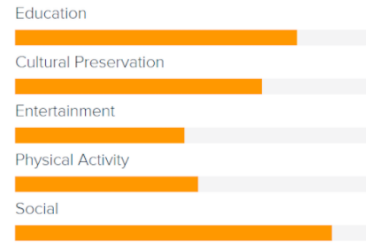- Be the best teacher to her students

Frustrations

- There is a lack of funding for education in the Jiu Valley.
- Students lack engagement with their studies.
- Students are leaving the Jiu Valley due to a lack of opportunity.

Age: 27
Work: Teacher
Family: Single
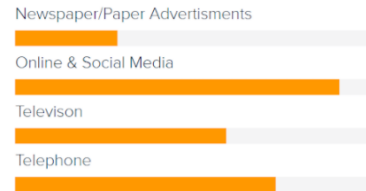**Location:** Petrila, Romania

Bio

Ms. Smith is a high school teacher in the Jiu Valley. She heard of this project through other teacher friends. She has lived in the valley her whole lif and loves to help educate and enrich the lives or her students. Ms. Smith is very involved in the community and always jumps at the chance to participate in community events. She also feels strongly about ensuring that her students stay engaged with school, their community, and their culture.

Motivation

Education

Cultural Preservation

Entertainment

Physical Activity

Social

Preferred Outreach

Newspaper/Paper Advertisments

Online & Social Media

Televison

Telephone

Appendix K: User Stories

Kat Austen can use the application to upload instructions to the public in video or text form

Ms. Smith can use the application to teach her students about the history of the valley

Nicoleta can use the application to spread awareness of important places in the valley

Adrian can use the application to preserve and share the sounds of places important to his history

Yuri can use the application to race his friends to collect all of the checkpoints

As someone who doesn't use technology I can tag along with someone who has the app and gain a similar experience

As a community moderator, I can moderate submissions on the app in order to increase their quality

As a public user I can use the application to teach her kids about the history of their family

Appendix L: Application Booklet Example

Title Page

What Users Personas Shaped This APP?

Our team created five user personas to identify with the generic user groups our app is intended to serve. The user personas created helped the team recognize the necessary design accommodations needed to ensure that our application is efficient and friendly to all participants.

Nicoleta the NGO Member

Goals
- Preserve culture and heritage in the Jiu Valley
- Communicate the importance of industrial heritage
- Involve the community and organize events

Frustrations
- Roadblocks from higher-ups
- Lack of awareness from outside communities

Bio
Nicoleta is a member of an NGO working in the Jiu Valley. She is involved with planning and organizing community events centered around promoting cultural heritage in the area.

Age: 30
Work: NGO/Community Work
Family: Married
Location: Vulcan, Romania

Motivation
Education
Cultural Preservation
Entertainment
Physical Activity
Social

Preferred Outreach
Newspaper/Paper Advertisements
Online & Social Media
Television
Telephone

Nicoleta, the NGO member helped the team determine that the app should look semiprofessional and should be very accessible.

Yuri Younger

Goals
- Graduate School
- Obtain a Successful Career
- Figure out Life Plan

Frustrations
- Lack of Career Options
- Too much focus on the old people

Bio
Yuri grew up as the son of a former miner. He doesn't want to go into mining, but instead wants a career in robotics. He first became interested in robotics through his school's FRC team.

Age: 18
Work: Student
Family: Living with his Parents
Location: Petrosani, Romania

Motivation
Education
Cultural Preservation
Entertainment
Physical Activity
Social

Preferred Outreach
Newspaper/Paper Advertisements
Online & Social Media
Television
Telephone

Yuri the student helped the team determine that it is very important to make sure the app is fun and engaging.

Design Page

App Maintenance

Update Language – Automatically Translate upon App Launch

- Follow File Path:

  app › scr › main › res

- Click on the 'values' folder which contains the text files for each desired language
- Find the country coded folder you would like (format is value-country code)
  - Ex: value-ro is the where the Romanian translation resides
- Click on the 'strings.xml file
- Translate all English words within the string commands to the corresponding language
  - Ex: Converting 'Hello' in English to Romanian

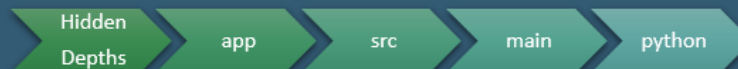   String = "Hello" ⟶ String = "Buna Ziua"

Update Access Token – If Changed

We created an Access Token to Zenodo, if it is ever changed, follow these steps:

- Follow File Path (for all files except script.py:

  Hidden Depths › app › src › main › java › com › jiuvalley sounds

- For script.py, follow the file path below:

  Hidden Depths › app › src › main › python

- Open these four files:

  Line 46 soundsubmission.java | Line 48 locationsubmission.java | Line 37 markeractivity.java | Line 3 script.py

- Find the 'access_token' field
- Replace old access token in each file
  - Ex: access_token = "old token" ⟶ access_token = "new-token"
- Line numbers for the access_token can be found above

Maintenance Page

Upload the Adroid Package Kit

The fourth step is to upload the Android Package Kit (APK) which will allow users to install the application on android devices off the Google Play Store. To set this up, follow the steps below:

1. From the menu under all applications, select Release Management.
2. Select App Release
3. Choose Production Release
4. Click Create Release
5. Follow the upload instructions for the APK files

The fifth step is to prepare the store listing. This will set up the page where users will learn about the app to download it. To add this information:

1. Go to the menu and under store presence, click store listing
2. Add the title *Jiu Valley Sounds*, a short description, and a full description.
3. Add screenshots of the app, images, icons, and videos.
4. Categorize the app into the relevant type and category
5. Add contact details and a privacy policy (if needed)

Prepare Listing

Add Content Rating

The sixth step is to add a content rating so that the app is not removed from the app store. To add a rating:

1. Select the app in the Play Console and from this menu, click Store Presence
2. Click Content Rating
3. Add your email address and confirm email address.
4. Categorize app in the correct section. We believe this app fits under Social Networking, Forums, Blogs, and UGC Sharing

How to Publish the Application Page

Listing Preparation Ideas

Long App Description

Do you want to get outside, interact with nature, AND learn about soundscapes? Then Jiu Valley Sounds is for you! This application was created for use in Kat Austen's Jiu Valley Sounds sound collection project in the Jiu Valley, Romania. It includes a community populated map featuring sound submission locations, sounds submitted, and more information about the Jiu Valley Sounds project. Download today to start making soundscapes!

Short App Description

Do you want to get outside, interact with nature, AND learn about soundscapes? Then Jiu Valley Sounds is for you! This application was created for use in Kat Austen's Jiu Valley Sounds sound collection project in the Jiu Valley, Romania. Download today to start making soundscapes!
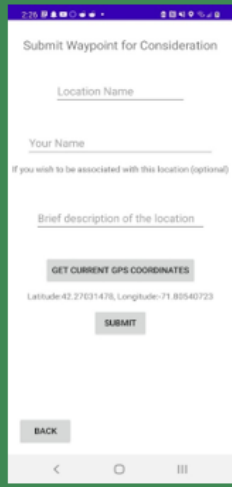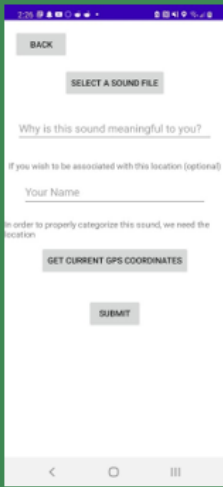
Recommended Categorization

Art and Design

Education

Maps and Navigation

Music and Audio

Social

Application Screenshots

Application Listing Examples

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Appendix M: Contact Spreadsheet

	A	B	C	D	E	F
1	Key:					
2	Active-	Established contacts aiding in the *Jiu Valley Sounds* project				
3	Inactive-	Aided in the past but not longer actively assisting (can still be contacted unless other specificed)				
4	Recommended-	People we recommend reaching out to aid the project in some way				
5						
6	**Name:**	**Description of contact and their contribution:**	**Location:**	**Primary contact method:**	**Other contact methods:**	**Correspondance:**
7	Andrei Dascalescu	Planeta Petrila Film Director, we reached out over Facebook and heard back right away. We watched his film then scheduled a meeting with him where were we asked questions and he provided us with information on the valley. He also connected us with Mihai	Romania (not the Jiu Valley)	Facebook Messenger- https://www.facebook.com/andrei.dasc alescu		These are notes from our meeting with him
8	Mihai	Secretary General at Planeta Petrila NGO, architect, Andrei put us in contact and we set up a Zoom call where we talked about the NGO and the Valley. He helped answer questions and give us some ideas. He also connected us to teachers in different cities of the Jiu Valley.	Timișoara, Romania (has family and contacts in the valley)	Facebook Messenger-	https://www.linkedin.com/in/mihai idanciu	These are notes from our meeting with him
9	Nicoleta	Teacher at ...... has answered our email is willing to run a workshop in her classroom. Her highschool students speak English and have smartphones. She seems	Petrila, Romania		Facebook Messenger-	After the facebook post the group sent an indiviual email to Cindea and radu and the following email chain ensued
10	Radu	Art Teacher working with Nicoleta, on that email chain	Petrila, Romania			After the facebook post the group sent an indiviual email to Cindea and radu and the following email chain ensued
11	Rolland	Infomation technology teacher at https://www.cnme-petrosani.ro/catedre-2/catedra-de-matematica-informatica-si-tehnologii/	Petrosani, Romania		@gmail.com	A part of the Inital message with Mihai, we recieved his contact information from him and sent an email

Sample of Contact Spreadsheet

Appendix N: Interview Summation

Interviewee	Date	Main Coded Words	Themes
Kat Austen	3/29/21	Project engagement, Workshops, Sound Collection	Project success is measured by quality of content and engagement rather than quantity of content.
Andrei Dascalescu	4/02/21	Film, Community Outreach, Mining	Outreach is mostly done over Facebook. Mining is important to the community.
Mihai Danciu	4/07/21	Community Outreach, NGO, Mining	Community outreach can be achieved through Facebook and contacting local schools. Mining is important to the community.
Prof. Frederick Bianchi	4/15/21	Sound Collection Technology, App Development Suggestion	Utilize existing sound collection and app development technologies.