

Designing an interactive online repository for folklores of Assam

By - Rubayat Ahmed
Roll No. 216330013

Guided By - Prof. Ravi Poovaiah
IDC School of Design, IITB

Approval Sheet

The Interaction Design Project- 3 titled “Designing an interactive online repository for folklores of Assam” by Rubayat Ahmed, Roll Number 216330013 is approved in partial fulfillment of the Master in Design Degree in Interaction Design, Indian Institute of Technology Bombay.



Project Guide



Chairperson



External Examiner



Internal Examiner

Acknowledgment

First, I would like to extend my gratitude to Prof. Ravi Poovaiah for his support and guidance throughout this project.

I am thankful to all the Interaction Design faculties for their valuable feedback and suggestions at every stage of the project that helped me to identify my mistakes and improve on them. My thanks to all those people who participated in the user study and evaluation processes.

I would like to express my gratitude to Prof. Meghna Choudhury, Prof. Faguna Barmahalia, Prof Bihung Brahma and Prof Parasmani Dutta for their support and valuable inputs on the subject matter. Also heartfelt thanks to the UN Academy and NIB Kokrajhar for letting me conduct the study at their school.

Thanks to my friends for their inputs, sharing their experiences, feedback and willingness to help me with this project at each stage.

Rubayat Ahmed

Abstract

The project focuses on the designing of an online interactive repository for Assamese folklores. The aim of the project is to take a user-centric approach in designing a participatory archive for Assam, a state in northeastern India known for its rich cultural heritage and diverse ethnic groups. The project explores alternative methods for collecting folklore data, with a particular emphasis on gathering data from different indigenous communities through school students.

The report highlights the cultural diversity of Assam and the importance of preserving its folklore, which encompasses oral traditions, beliefs and customs, material folklore, and performing arts. It acknowledges the challenges faced by traditional archives and emphasizes the need for an interactive online repository that can adapt to the evolving digital landscape. The report outlines the project's objectives, which include designing the repository interface along with a prototype, exploring alternative data collection methods and testing them. The primary workflows of the system, involving stakeholders, repository components, and data flows, are also designed. The scope of the project excludes aspects such as database management, security, metadata and copyright issues which are beyond the project's immediate focus. By taking a holistic approach to the design of an online interactive repository, this project aims to contribute to the preservation and accessibility of Assamese folklores, incorporating user participation.

Content

Approval Sheet.....	2
Acknowledgment.....	3
Abstract.....	4
Content.....	5
1. Introduction.....	8
2. Background.....	9
2.1. Cultural Diversity of Assam.....	9
2.2. Importance of archiving.....	9
3. Secondary Research.....	10
3.1. History of digital archive.....	10
3.2. Problems with traditional archives.....	12
3.3. Related Work : Cultural Heritage Archives.....	13
4. Primary Research.....	17
4.1. Online survey on digital presence of Cultural Data of Assam.....	17
4.2. Results of survey.....	18
4.3. Takeaways from the survey results.....	20
4.4. User Interviews.....	21
4.3. Talking to the experts.....	21
5. Assamese Folklore.....	23
5.1. The rich heritage.....	23
5.2. Classification of folklore.....	24
6. Digital Archiving - Stages.....	26
7. Stage-wise Problem Identification.....	29
7.1. Problems at the creation data creation and acquisition stage -.....	29
7.2. Problems at Cataloging and Preservation stage -.....	31
7.3. Problems related to storage -.....	31

8. Preliminary system level ideations.....	33
9. Scoping the project.....	34
10. Ideating alternative methods of data acquisition.....	35
10.1. Types of content.....	35
10.2. Methods.....	35
10.3. The study.....	37
10.4. Reflections.....	40
11. Designing the repository website.....	42
11.1. Setting out goal.....	42
11.2. Ideations.....	43
11.3. Site Map.....	44
12. Final Design.....	45
12.1. Repository Home Page.....	46
12.2. Category Page.....	48
12.3. Artifact Page(Oral Folklore).....	49
12.4. Artifact Page(Material Folklore).....	51
12.5. Artifact Page(Performing Art).....	52
12.6. Contributed content.....	53
12.7. Discover New Contents.....	54
12.8. Map View.....	55
12.9. Contribution.....	58
13. Prototype.....	62
14. Evaluation.....	63
14.1. Participants.....	63
14.2. Methods.....	63
14.3. Results.....	64
14.3. Result of the Usability Score Test.....	65
15. Challenges and limitations.....	67
16. Discussion.....	67

17. Future Steps.....	68
18. Conclusion.....	68
References.....	69

1. Introduction

The information age of the internet, known as Web 1.0, began with the Internet's boom in the early 1990s. This first version of the Web was created by a few people who created web pages and content for a large group of readers, allowing them to access facts, information, and content from the sources. With the widespread use of computers and the internet in the latter half of the twentieth century, the concept of digital archives began to emerge. As more information was created and stored digitally, it became clear that traditional preservation methods, such as paper archives, were insufficient for ensuring. Today, digital archives are an integral part of the cultural heritage landscape, and they play a critical role in preserving and providing access to digital information for future generations.

The majority of the digital archives currently in use were created using a western epistemology and a western definition of cultural heritage (Moradi et al. 2020). The entire concept of curating cultural heritage for archival purposes stems from a colonial mindset. Native histories, for example, were largely crafted by White America, collected without consent, and frequently retold without the Native point of view. Most current digital archives in India could be considered products of colonial logics and goals in terms of indigenous cultural heritage conservation, where stories are told by institutions or curators rather than the people themselves. As a result, Indigenous data sovereignty is compromised. Archives that collect materials from a wide range of communities have not always conducted adequate user research. As a result, these cultural heritage archives or repositories have been a huge

failure in terms of engagement or providing important indigenous heritage information.

Through this project we'll look at an user centric approach to design a participatory archive for one of the north eastern states of India, Assam which is home to rich heritage and diverse ethnic groups. Though the aim of the project is to look at the problem in a holistic system level approach while considering both the data contribution and and accessing, but as we go along, based on the limitations and constraints we'll be specifically focusing on designing an interactive online repository.

2. Background

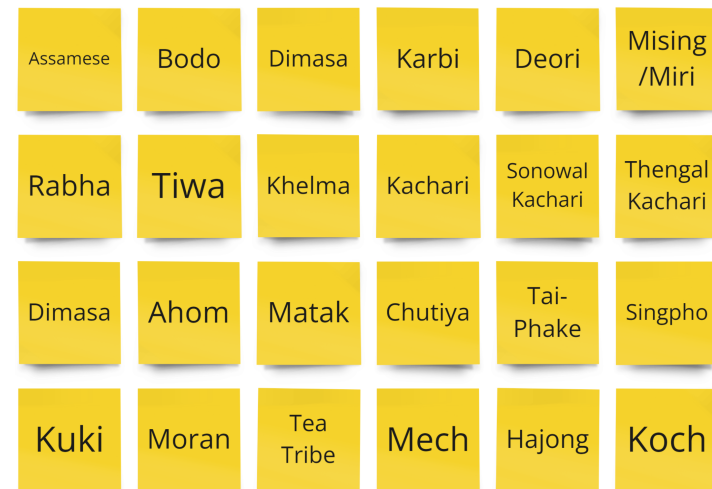
2.1. Cultural Diversity of Assam

Cultural diversity is a hallmark of Assam, a state located in the northeastern region of India. It is known for its rich heritage and diverse ethnic groups that have made the state their home. With its long history of migration and settlement, Assam is home to a wide range of cultural traditions and practices that have been passed down from generation to generation.

Assam has a long history of migration and settlement, which has contributed to its cultural diversity. Over the centuries, people from various regions and countries have made the state their home. This has led to the development of a rich cultural heritage that reflects the diverse traditions and practices of the different communities that make up Assam.

One of the major ethnic groups in Assam is the Assamese, who are the indigenous people of the state. They have a rich cultural heritage that is evident in their language, literature, music, dance, and traditional clothing. Another important ethnic group in Assam is the Bodo, who are indigenous to the state and have their own distinct culture and traditions. The Bodo are known for their traditional songs and dances, which are performed during festivals and celebrations. They also have their own language and writing system, which are still used by the community today. In addition to the Assamese and Bodo, there are many other ethnic groups in Assam, including

the Garo, Rabha, Karbi, and Deuri. Each of these groups has its own unique culture and traditions, and they all play an important role in the state's cultural diversity.



Assamese	Bodo	Dimasa	Karbi	Deori	Mising /Miri
Rabha	Tiwa	Khelma	Kachari	Sonowal Kachari	Thengal Kachari
Dimasa	Ahom	Matak	Chutiya	Tai-Phake	Singpho
Kuki	Moran	Tea Tribe	Mech	Hajong	Koch

Fig. List of ethnic groups in Assam

2.2. Importance of archiving

Each of these distinctive ethnic communities and groups has its own language, writing system, folklore, festivals, way of living, and eating customs. But like the majority of indigenous cultures, these small ethnic groups have been effectively

preserving their rich cultural heritage orally for a very long time. Additionally, the spread of other cultures' dominance over them or factors like globalization makes it challenging for people to carry on their traditions and identities until they do so on their own. For example learning one's native language becomes challenging if it is not spoken at their home because in school students are taught in a common language, which is mostly the province's official language. So, it is crucial to document or archive these artifacts; the benefits of archiving indigenous cultural archives are numerous.

1. **Preservation of Cultural Heritage:** Archiving indigenous culture helps to preserve the unique traditions, beliefs, practices, and knowledge of indigenous communities, which are often in danger of being lost due to globalization, migration, and other factors. By preserving these cultural elements, future generations can learn about and continue to practice the cultural heritage of their ancestors.
2. **Cultural Identity:** Archiving indigenous culture helps to maintain the cultural identity of indigenous communities and ensure that their cultural heritage is not lost or forgotten. This is especially important for communities that are marginalized or facing threats to their cultural survival.
3. **Historical Context:** Archiving indigenous culture provides historical context and helps to understand the evolution of cultures over time. It provides insight into the cultural practices and beliefs of the past, which can be used to better understand the present and shape the future.

4. **Accessibility:** By archiving indigenous culture, it becomes more accessible to the public, researchers, and scholars. This can lead to a deeper understanding of indigenous cultures and promote cross-cultural exchange and dialogue. This is important for creating a more inclusive and equitable world, where different cultures and perspectives are valued and respected.

3. Secondary Research

3.1. History of digital archive

With the widespread use of computers and the internet in the second half of the 20th century, digital archives can be traced back in time. Institutions like libraries and governmental organizations realized the importance of preserving and enabling access to this digital content as an increasing amount of information was being produced and stored in digital form. Erin Baucom in her paper titled 'A Brief History of Digital Preservation' defined digital archiving as "A combination of policies and workflows that dictate the active management of digital objects to ensure their continued authenticity and meaningful access over time".

The history of digital archives goes back to the early 90's when the internet was booming and few people were concerned with the then-current preservation strategy of backing up electronic records with printed paper copies. One of them was an Australian-Israeli historian specializing in Hebrew and Judaic

studies, Ronald W. Zweig who pointed out that a more comprehensive effort, driven by policy and supported by government, was needed to keep these digital objects available for future researchers (Zoom and Myntti 2018).

In December 1994, the Commission on Preservation and Access and the Research Libraries Group created the Task Force on Digital Archiving. The purpose of the Task Force was to investigate the means of ensuring “continued access indefinitely into the future of records stored in digital electronic form.” During the same time Brewster Kahle founded was working on a web crawling company called Alexa Internet. Seeing its potential and following recommendations from the task force report he built the world's first digital library - The **Internet Archive**. The platform contained all the published works of humankind, free to the public, and structured as a nonprofit to last the ages.

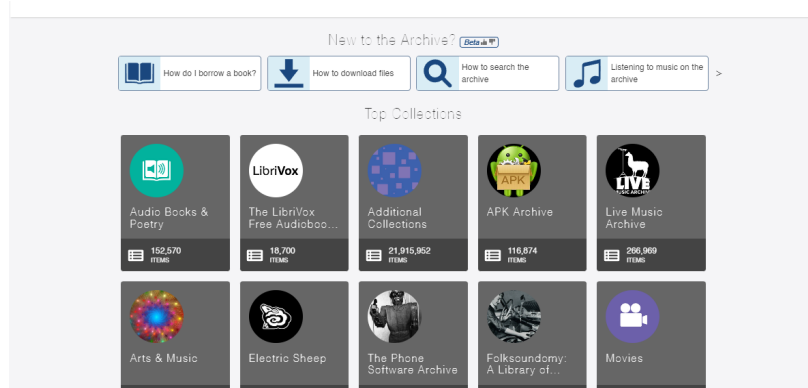


Fig 1. Landing page of internet archive

Following this, a number of standards, guidelines and technological innovations started emerging around digital archives which gave opportunities to archive practitioners such

as universities and governments to create their own archive systems. Some of them are...

1. **OAIS Reference Model** - The OAIS Reference Model is a ISO standard model to create any digital archives. It was introduced in 1997 to standardize and promote interoperability among digital libraries, archives and other institutions maintaining digital information over the long term.

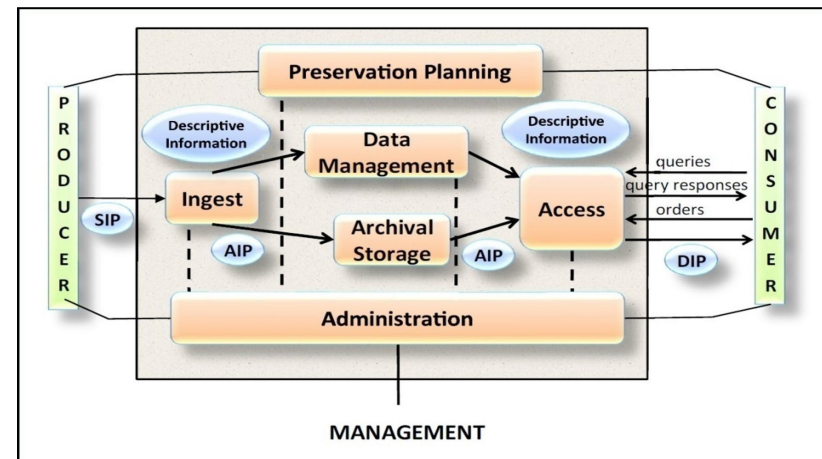


Fig. OAIS Reference Model

2. **Trustworthy Repositories Audit & Certification (TRAC)** - The TRAC checklist is an auditing tool to evaluate institutions' dependability, dedication, and readiness to take on the long-term preservation responsibilities of OAIS-compliant digital repositories. The three major metrics of TRAC are,
 - a. **Organizational Infrastructure** - the repository's administrative, staffing, financial, and legal functions

- b. Digital Object Management - the handling of digital objects from ingest to access
- c. Technology, Technical Infrastructure, and Security - the technology used to handle ingested objects

Similar certification systems that exist currently are -DSA(Netherlands), nestorSEAL(Germany), DPCMM (Digital Preservation Capability Maturity Model) by Dollar and Ashley, DRAMBORA (DPE) etc.

3. **Trusted Digital Repositories: Attributes and Responsibilities** - A list of criteria was identified in the RLG-OCLC Report that defined a Trusted Digital Repository (TDR) as “one whose mission is to provide reliable, long-term access to managed digital resources to its designated community, now and in the future”. According to it the basic requirements needed to support a digital repository, includes,
 - a. OAIS compliance
 - b. Administrative responsibility
 - c. Organizational viability
 - d. Financial sustainability
 - e. Technological and procedural suitability
 - f. System security
 - g. Procedural accountability

The report emphasized the need for metadata that would be specialized for digital preservation requirements and reaffirmed the need for a shared understanding of what certification of digital repositories would mean in practice.

4. **PREMIS Data Dictionary for Preservation Metadata** - In order to keep digital objects usable over the long term and make them accessible in some form in the future, metadata defines the information that is required. Metadata for digital preservation is crucial for repositories, which house and manage information objects over an extended period of time. PREMIS is the standard for preservation metadata and has been incorporated into many preservation repository systems.
5. **Digital Preservation Network (DPN)** - Founded in 2012, DPN is a commitment to replicate the data and metadata of research and scholarship across diverse software architectures, organizational structures, geographic regions, and political environments.

3.2. Problems with traditional archives

Although the value of digital archives or repositories cannot be disputed, they have consistently struggled to adapt to a changing world. As a result, the ethos of these repositories has come into question. Some key issues with traditional archives are -

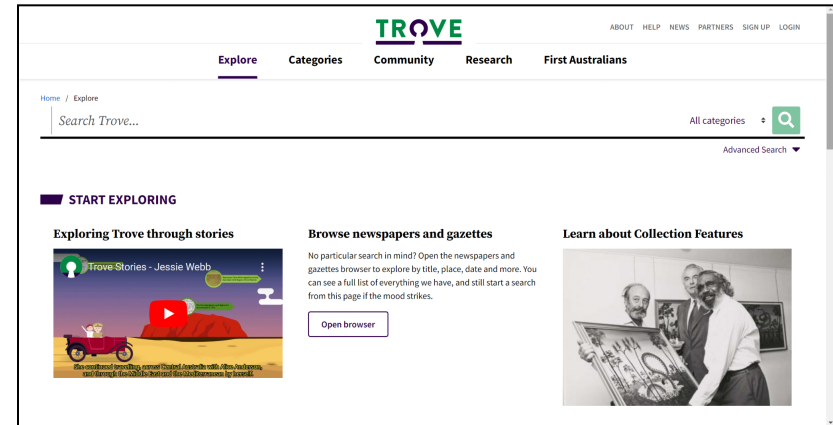
- Obsolescence is one of the unending battle
- Preservation is based on curation, which is done alone or in groups, so they focused on very specific records.
- Prioritize preservation, so they seek to collect the highest-quality materials

- The archives that are build by academics and they built it for people like themself
- File formats are continually updated
- Hardware constantly replaced
- Software abandoned
- Policy and legal issues
- Intellectual property right issues
- Not so user friendly Interfaces

3.3. Related Work : Cultural Heritage Archives

According to E. B. Tylor (1871), “Culture is that complex whole which includes knowledge, belief, art, moral, law, custom and any other capabilities and habits acquired by man as a member of society.” Culture is one of the most important aspects that shapes the identity and life of individuals and societies. Cultural heritage archives refer to collections of cultural materials, such as manuscripts, photographs, artifacts, audio and video recordings, that document the history, traditions, and cultural practices of a society or community. These archives serve as a record of the cultural heritage of a community and provide valuable insights into the past, present, and future of a culture. They help to preserve cultural diversity, support cultural identity, and provide historical context.

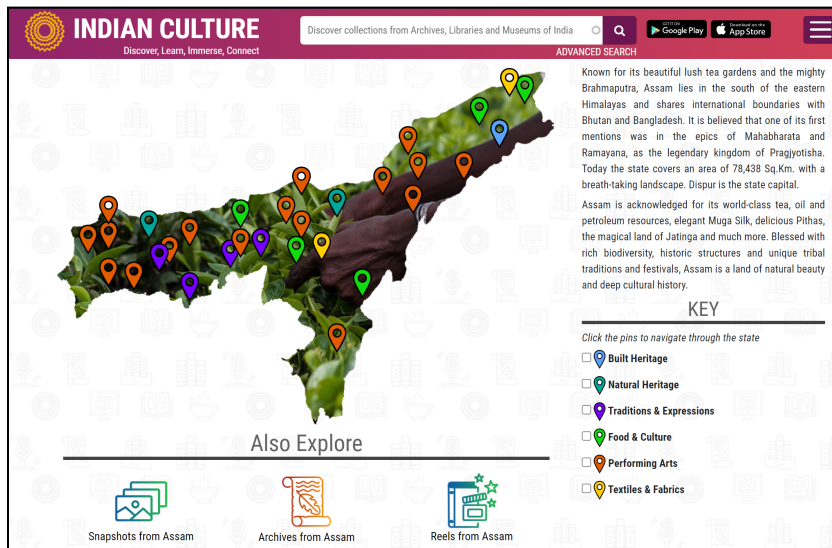
- Trove, National Repository of Australia
(<https://trove.nla.gov.au/>)



Trove, is a single point of entry to a treasure trove of artifacts, curiosities and stories from Australia’s cultural, community and research institutions. It has curated contents and historical data, newspapers and website archives. But while looking for information it turns out to be not so intuitive because of the poor categorization of contents and overpowering of redundant information on each category. All the sections of the site follow the same approach for presenting the information, when each of the categories like community, research, first Australians requires different layouting and information architecture in itself. Which makes it hard to navigate through the section to find something, Though an advanced search option is there which works quite properly, but it requires a higher level of engagement and content knowledge. Otherwise some good features of the site were,

1. Archived newspaper articles are automatically translated using image processing, and categorized into different sections, which helped in creating a large amount of data.
2. They have created their own API, which is used by the researchers to use the data directly.
3. Website archives feature was intuitive in comparison to the internet archives, and has a modern UI to navigate.

b. North East Archive of Indian Culture By Govt. of India
(<https://www.indianculture.gov.in/culture-heritage/assam>)

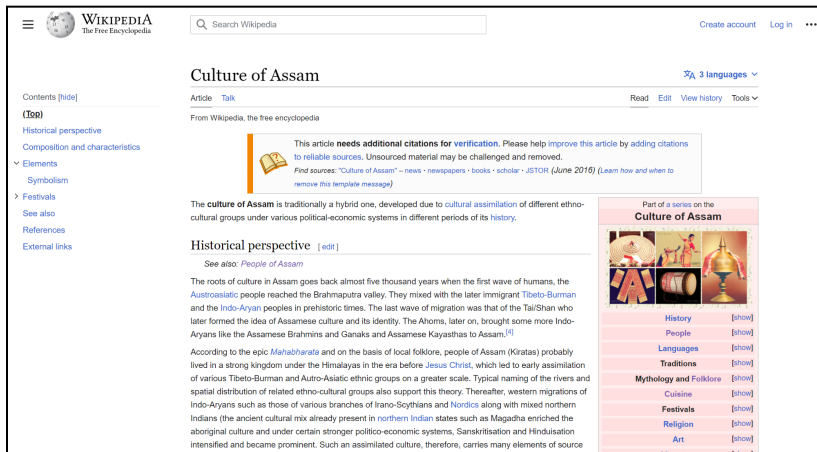


The Indian Culture portal of Govt. of India, has a dedicated section for northeast archives, inside which I looked at Assam, It has three distinct category of informations which are, Snapshots of Assam that has

photographs related to assamese culture, Archive section for all the digital or digitized documents and a reels section that has few videos and films. The home page constitutes a map of Assam with landmarks highlighted which contains cultural artifacts that were supposed to be native of that place, which turned out to be wrong, rather random artifacts are attached to these locations. Key takeaways -

1. All the contents are curated with great detail and reliable sources. Though most of them are exhibited or collected from museums which doesn't reflect on their truest form as it is practiced in day to day life.
2. Archive section has only textual information mostly reported by the government.
3. Description and metadata are displayed in a very technical way, which might not have any value to a regular visitor.
4. No proper description of the artifacts are given.
5. No categorization of artifact types.
6. No mention of indigenous tribes and communities.

c. Wikipedia(<https://www.wikipedia.org/>)



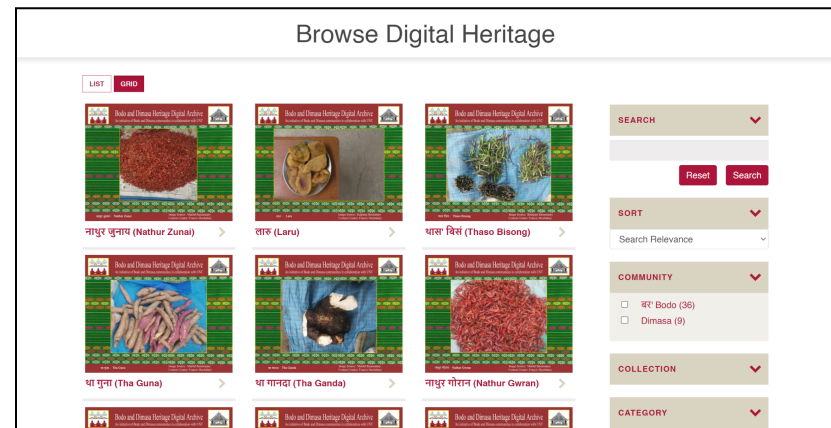
Wikipedia, as we already know the encyclopedia of world knowledge, has a lot of content on the culture of Assam, from food, people to history. But the main problem with wikipedia is extensive information architecture due to its vast amount of content. Which makes navigating through the site overwhelming. Some critiques of wikipedia from the standpoint of a cultural knowledge repository are -

1. The visual design of Wikipedia is functional but minimalistic. While it prioritizes content over aesthetics, the overall appearance could benefit from more visual hierarchy and a more engaging layout.
2. While simplicity is valued for an information-heavy website, there is room for improvement in terms of user interactions, such

as more intuitive buttons, clearer calls to action, and improved feedback for user inputs.

3. Wikipedia's strength lies in its collaborative nature. However, the website's design could provide more visibility and recognition for contributors, fostering a sense of community and encouraging user participation and engagement.
4. Wikipedia heavily relies on text-based content, whereas cultural artifacts are best to experience through multimedia.

d. Bodo Dimasa Archive(<https://bododimasaarchive.org/>)



Bodo Dimasa heritage archive is a collection of traditional cultural knowledge of two major indigenous communities of Assam namely Bodo and Dimasa. It is not a typical archive, rather it stores traditional

material which is sourced from the volunteers of the archive. It's a new project taken up by the National Institute of Bodology in association with University of North Texas. The digital archive is developed using the MUKURTU platform which is a CMS platform specifically designed for such purpose. Talking to the representatives of the administrations, and analyzing the website, here are my key takeaways,

1. Categories of artifacts are appropriate as they are made with consultation of community members, who also had a very proactive role in creating the whole archive.
2. Metadata is standardized, and sorting and filtering options helps in reorganizing data accordingly.
3. Small description is given in some of the artifacts, but not all. Also only one photo/video file is attached for each artifact which sometimes is not enough to get a good understanding of the artifact.
4. Multilingual support helps the respected communities to go through it in their own language.
5. Many components of the website have wrong identifiers that lead to frustrations, for example in the categories when hovered over, it changes its states indicating clickability, it has no functionality.
6. Talking to the representatives, it revealed that engaging volunteers is a bit difficult, without personal interest and motivation it is difficult to

curate high quality materials even with monetary benefits.

- e. Tribal Research and Cultural Institute, Tribal Welfare Department, Govt. of Tripura(<https://trci.tripura.gov.in/>)



With the same dynamics of indigenous people as of Assam Tripura govt has a dedicated website for the Tribal Research, which also has archives and cultural data of the different tribes and community though it is not dedicated to folklore or cultural artifact archiving. Some takeaways -

1. List of tribes are well categorized with images of each tribe's people with traditional attire.

- Though there is very less information available about each one then when clicked.
2. Archive page has lots of useful printed resources and documents like books, journals, reports with nicely organized categories, but there is no search option, anchors or list of content types. All it has a pagination menu which makes it difficult to find the correct document quickly.
 3. As most of the government maintained websites, this also has a lot of redundancy.

4. Primary Research

4.1. Online survey on digital presence of Cultural Data of Assam

To better understand the current state of digital presence of cultural information and the general public's interests, I conducted an online survey using Google Forms. So far, 44 responses have been gathered. The main objective of the survey was to get a general sense of the problem space. The key things that I wanted to get insights on were,

1. Are they really interested to learn about their culture ?

2. What are their specific interest areas in culture?
3. Where do they search for information?
4. Do they get what they want?

With the above goals in mind the questionnaire was formulated and shared among my friends and in social media.

The questions of the survey are,

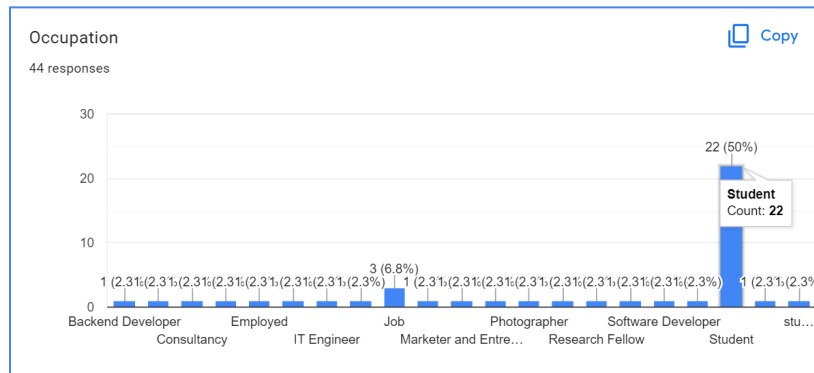
1. Full Name
2. Occupation
3. If you're a student, mention specialization.
4. Are you an avid reader? if yes , what types of books do you read?
5. Do you read newspapers? If yes for what purposes?
6. Are you aware of the cultural diversities of Assam? For example, 55+ languages are spoken and 20+ different tribes co-exist together in Assam.
7. What are your areas of interest in the cultural scenario of Assam?
8. What is the primary source of knowledge for the areas of your interest?
9. Is there ever a time when you need to search the internet for very specific information about Assamese cultural artifacts? For example, you might be interested in learning more about a specific dress from the Bodo Tribe.
10. If yes, how often do you need to search for such kind of information?
11. What is the purpose of searching?
12. Where do you search?
13. From the above selected options where do you get the most valuable information?

14. Does reliability matter to you? Like who is the author or from where the information is coming?
15. Are you satisfied with the available online information on our diverse culture?
16. Do you follow any online archives, digital libraries, E-magazines, or social media pages to keep up with Assam's cultural scene?
17. If Yes, Can you mention some of them?

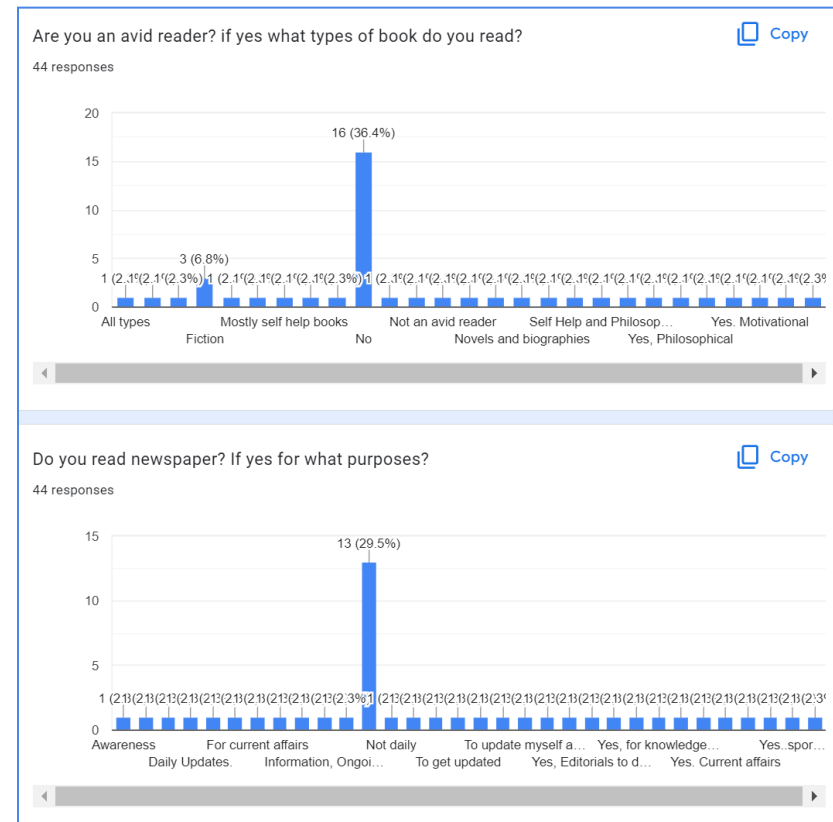
[link to the form : <https://forms.gle/3C5dhk8vdHdX549FA>]

4.2. Results of survey

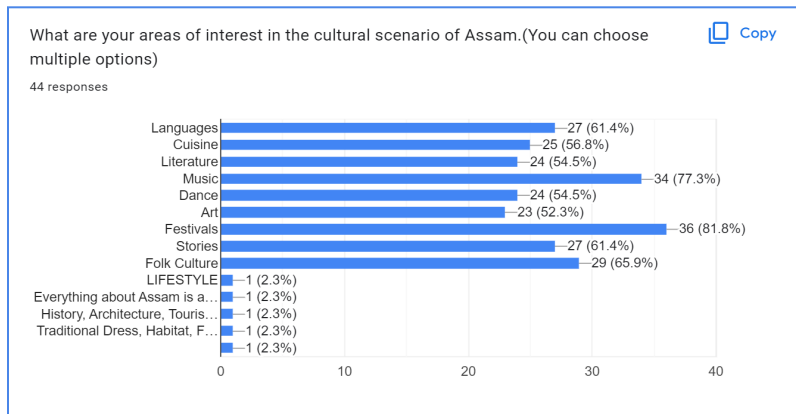
A total of 44 responses have been collected till now, out of which half of them are students and the remaining half are working professionals.



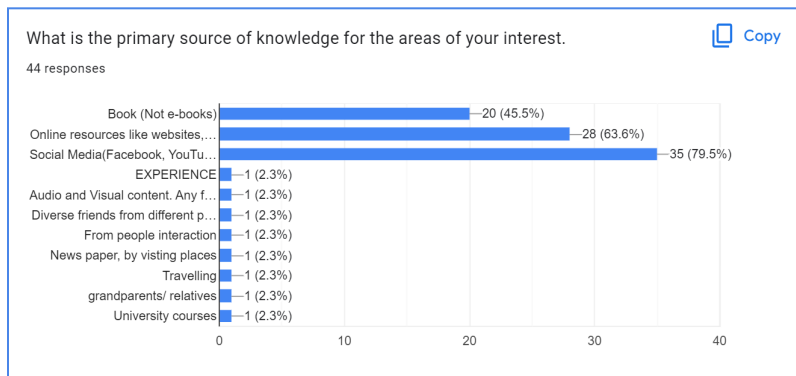
The majority of users responded to the next two questions by saying they read books and newspapers. The purpose of asking this question is to determine whether the user does something voluntarily to feed their craving for knowledge. According to the findings, the majority of people read psychology, thriller, novel, and fiction books, and the majority of people read newspapers to stay current on current events.



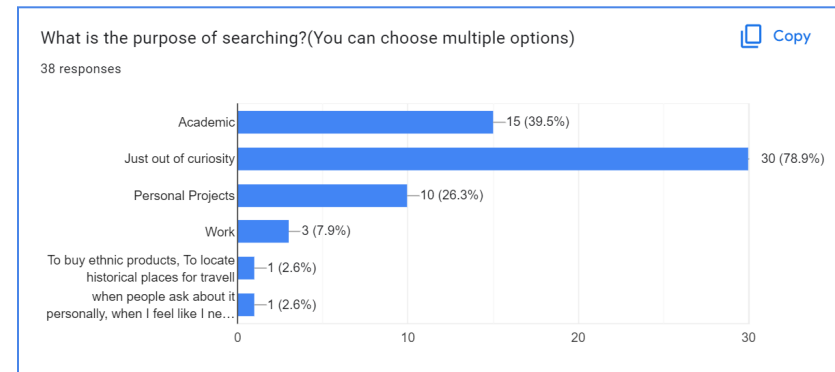
In response to the question about interested areas of culture the Festival option is ticked most of the time(89%), followed by Music(77%), Folk Culture(66%), Language(61%) etc.



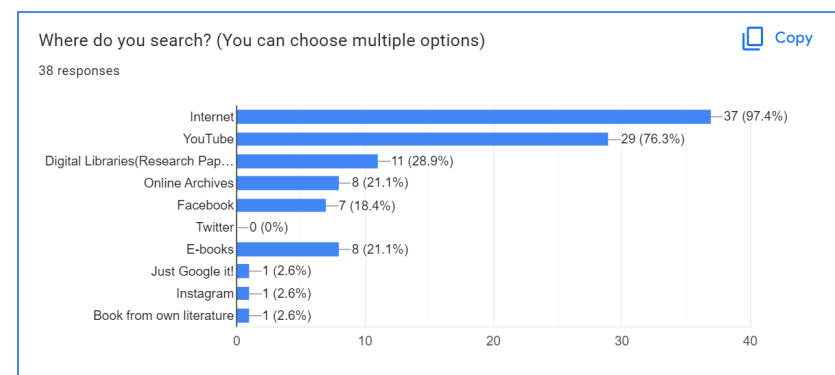
With the 80%, social media like Facebook and YouTube becomes the primary source of knowledge for the areas of users interest.



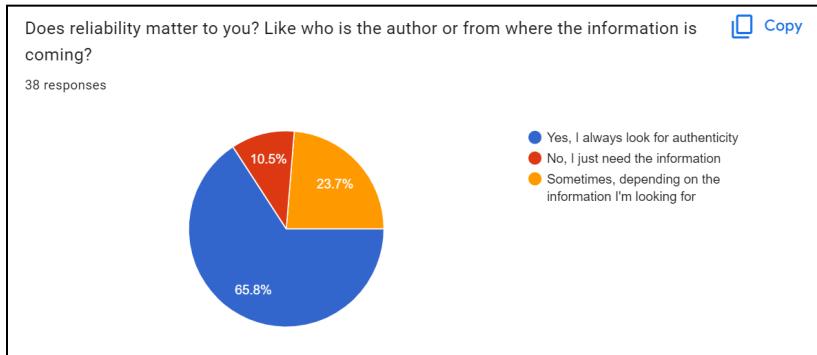
The reason for searching for culture related specific information is just for curiosity with around 79% people ticked. Next is academic and then personal work.



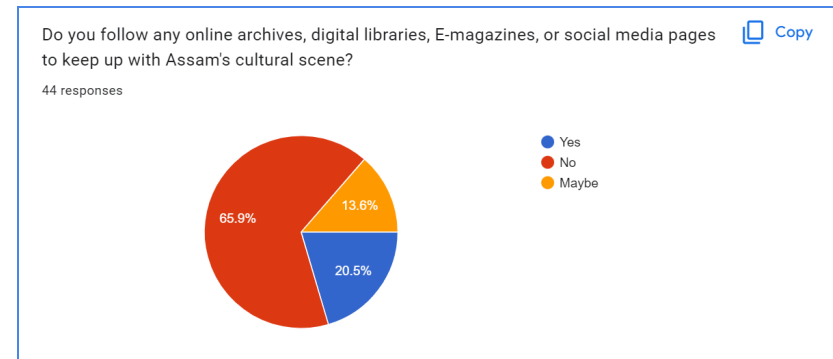
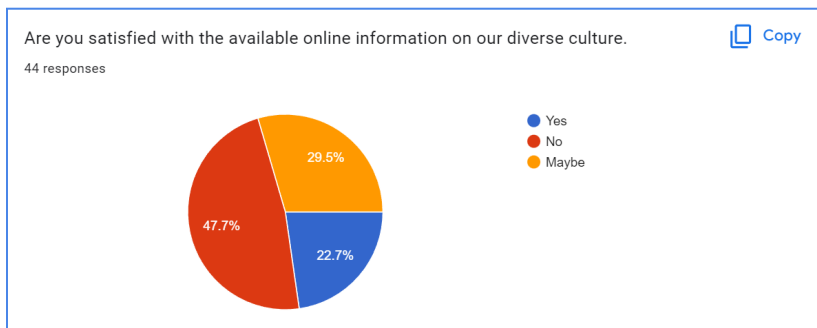
When asked where they look for specific information, people said the Internet is their first choice, followed by YouTube and digital libraries (Academic). Online archives, Facebook, and e-books are becoming less popular options. The Internet also becomes the place where they find desired information.



When asked on their preference of reliability of information most people(66%) choose that they need authentic information, while for 24% it depends on the content and for 10% of the people it doesn't matter.



A majority of people aren't satisfied with the available information on cultural heritage of Assam and also don't follow any specific digital resources. Some of the people follow social media pages and youtube channels for updates while a very negligible percent follows academic digital libraries and digital archives.



4.3. Takeaways from the survey results

The survey aimed to validate my initial assumptions regarding the problem at hand, and the findings confirmed my expectations. The key findings from the survey are as follows:

1. The primary audience for our solution could be students who are eager to satisfy their thirst for knowledge and fulfill their academic assignments.
2. Folklores emerge as a compelling focal point for this project, as they not only receive high support in the survey but also face the imminent risk of extinction, necessitating urgent preservation efforts. In comparison to other aspects such as literature, language, and festivals, which are still actively practiced, folklores require immediate attention to ensure their survival for future generations.

4.4. User Interviews

To understand user's needs and current problems in-depth along with the overall point of view towards this project I have conducted 6 Semi-structured interviews with people I know who are from Assam. These people are chosen based on their interest in cultural artifacts as they have mentioned in the survey. Also all of them belong to different ethnic groups of Assam.

The objectives of the interviews were -

1. To know their knowledge of folk culture
2. To understand what they feel their duties are towards their communities
3. To know what motivates them to participate in such archives
4. To know broad design ideas they have regarding the same

Few leading questions were in my mind while conducting the interviews but all of the interviews went towards free flowing discussions revealing other important issues with digital heritage preservation. Each of the interviewees went on for around half an hour.

Key insights from the interviews are -

1. Awareness is crucial in order to sustain self-archiving
2. Highly interested people are ready to volunteer
3. External recognition is a motivator
4. Need of a common platform to revive one's own culture as well as to know about other communities culture
5. Depending on the thirst for knowledge, users want

different types of content like images, videos, detailed reports or research papers etc.

6. Need to assemble all available sources of data into one place
7. People who are surrounded by these cultural artifacts in practice, need not refer to such archives, It's the people who are detached from such practices needs it most

4.3. Talking to the experts

After establishing the direction for my project, I engaged with subject matter experts in Assam to gain further insights. My visit to Assam involved meetings with four university professors who provided valuable perspectives.

I met with [Prof. Meghna Choudhury](#) and [Prof. Faguna Barmahalia](#) from Gauhati University to understand the folklore dynamics of Assam. Prof. Meghna, from the folklore research department, specializes in the documentation of folklores. On the other hand, Prof. Faguna, from the Bodo department, has worked extensively throughout his life documenting bodo folklores.

Additionally, I had fruitful discussions with [Prof Bihung Brahma](#) from CIT Kokrajhar who is associated with the [Bodo Dimasa Heritage Archive](#) and [Prof. Parasmani Dutta](#) from Tezpur University having experience in digital archiving of cultural artifacts. Their insights provided valuable inputs on the challenges involved in creating and maintaining archival projects of this nature.

Furthermore, I engaged in an online conversation with [Prof. Christina Wasson](#) in the fields of design anthropology and her association with the [Bodo Dimasa Heritage Archive](#) project proved to be invaluable, adding significant depth to my understanding.

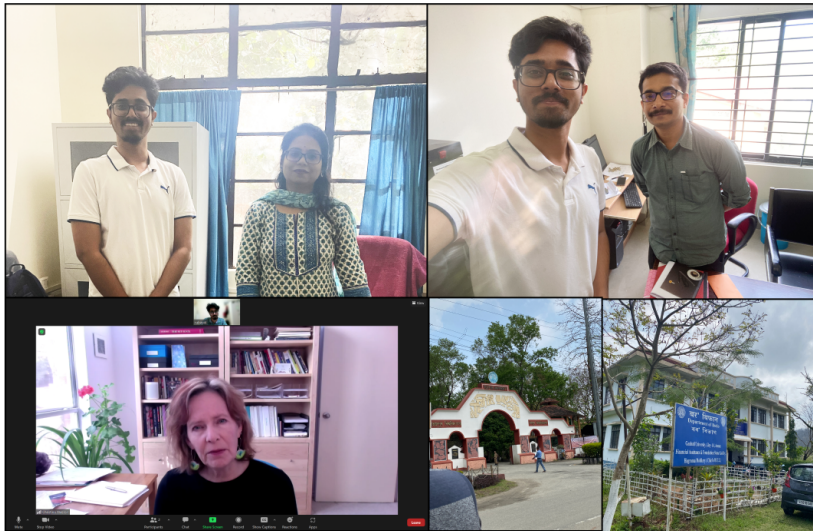


Fig. Meetings with experts

These discussions played a crucial role in refining the focus and positioning of my project and influenced key design decisions I have made, shaping the direction and approach of the project. Some significant takeaways are as follows,

Opportunities -

1. While previous attempts have been made on an individual level, it is evident that without the support of communities, technical tools, and collaborative methods, these repositories are unlikely to thrive in the

long term. It is imperative that these efforts become collaborative endeavors involving multiple organizations with shared interests, working together to ensure the sustained success of such repositories.

2. The Folklore Research Department is currently contemplating the establishment of an archive dedicated to Assamese folklore. They possess substantial data on Assamese folklore, accumulated through the research conducted by esteemed folklorists in the region over the past five decades. Additionally, as shared by Prof. Meghna, the department is planning to introduce new undergraduate and postgraduate courses that will further contribute to the research and development of folklore studies in the region.
3. Last year, the government of Assam established a new ministry called [Indigenous and Tribal Faith and Culture](#), which holds the potential to encourage and facilitate projects aimed at protecting and preserving indigenous faith and culture. As part of its mandate, the ministry is focused on creating digital libraries, making it likely that it would support initiatives such as the creation of a digital archive for indigenous folklore.
4. Researchers in this domain have amassed substantial amounts of raw data, including interview transcripts, photos, video clips, and more. However, the publication of this data in the public domain is contingent upon obtaining the necessary permissions and rights.
5. Folklores play a significant role in our socio-cultural and ecological environment, yet their importance is often overlooked. One such example was of [Dr. Purnima Devi Barman](#), how she used folklore as a way

to mobilize a group of village women and local communities to conserve the greater adjutant stork, an endangered wetland bird, in Assam

6. In the era of the internet and social media, the revival of folklores through new media platforms is essential to engage the emerging user base. By embracing new media, folklores can reach a wider audience, captivate their interest, and ensure their continued relevance in the modern digital age.
7. Traditional tools and materials, known as material folklore, possess unique properties that are shared across multiple communities in terms of their usage and creation. These artifacts serve as cultural bridges, connecting diverse communities through their commonalities in functionality and craftsmanship.
8. Engaging with communities at the village level can be immensely beneficial, previous attempts to crowdsource information at the block or village level have yielded promising results, indicating the effectiveness of such an approach. Additionally, folklore, being deeply rooted in rural areas, further emphasizes the significance of involving village communities in the preservation and documentation of this cultural heritage.
9. In recent years, young scholars have displayed a keen interest in preserving local culture. They bring an additional advantage of possessing technological knowledge that many older researchers in this field may not possess.

Challenges -

1. Managing volunteers is not an easy job, unless they're

self motivated.

2. Intellectual property rights emerge as a significant concern in such projects, necessitating careful consideration during content collection. It is crucial to obtain proper permissions and consents to ensure compliance with legal and ethical requirements. Safeguarding intellectual property rights is essential for maintaining the integrity of the project and respecting the rights of creators and contributors.

5. Assamese Folklore

5.1. The rich heritage

Assamese folklore is a rich tapestry of stories, legends, myths, and oral histories that have been passed down through generations. What makes Assamese folklore unique is the diverse range of ethnic groups and tribes that call this land their home. Each community has its own distinct folklore, which reflects their cultural beliefs, practices, and way of life.

Assamese folklore can be broadly classified into two categories – the tribal folklore and the mainstream folklore. The tribal folklore of Assam is diverse and varied, owing to the presence of more than 200 tribes in the state. Each tribe has its own set of myths, legends, and folktales that are unique to their culture. Some of the prominent tribes of Assam, such as the Bodo, Mishing, Karbi, Dimasa, and Tiwa, have a rich oral tradition that has been passed down through generations.

The mainstream folklore of Assam, on the other hand, is more closely associated with the Assamese language and culture. It includes a range of stories, legends, and myths that have been an integral part of Assamese society for centuries. The mainstream folklore of Assam is a reflection of the state's history, its people, and its cultural practices. It includes stories of the Ahom dynasty, the brave warriors of Assam, and the state's association with the mighty Brahmaputra river.

Assamese folklore has played a crucial role in shaping the overall culture of Assam. It has been a source of inspiration for artists, writers, and musicians who have drawn upon these stories to create masterpieces of their own. The stories and legends of Assam have also helped in preserving the traditional values and beliefs of the state's people. Assamese folklore is an integral part of the lives of the people of Assam, and its significance can be seen in various cultural practices and festivals celebrated throughout the state. Assamese folklore remains an essential part of the identity and cultural legacy of the people of Assam.

5.2. Classification of folklore

Assam's broad field of folklore can be categorized into four major categories. They are -

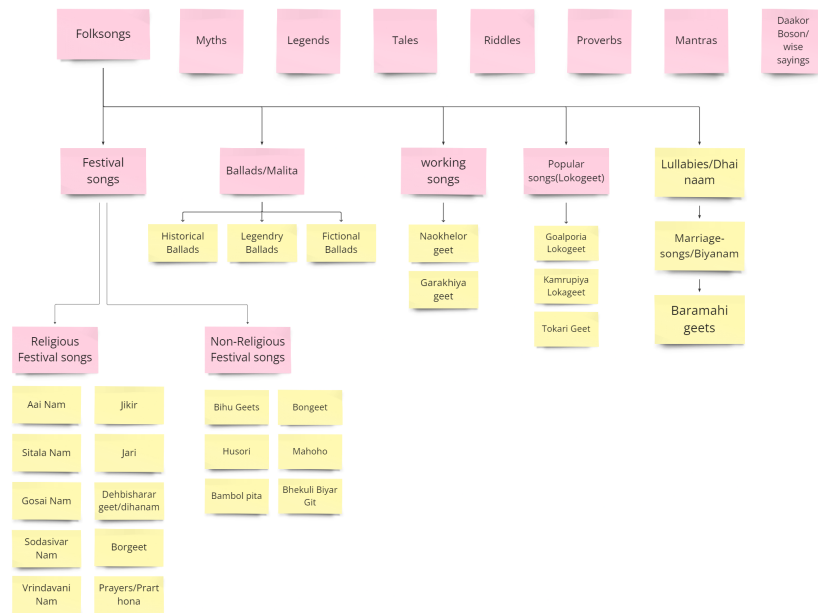
1. Oral Folklore
2. Beliefs and Customs
3. Material Folklore

4. Performing Art

However, it should be noted that most of the folklore artifacts are not standalone; rather, they are combined to create new artifacts. For example, individual elements such as songs, dances, instruments, and attire are combined to form a new folklore when they are used in a particular performance. Assamese folklore consists of many such elements, such as Bhauna, Ojapali, and Nagara naam. Even the famous Bihu dance has multiple folk elements associated with it.

Out of these four categories Oral folklore is the most vibrant one and also the most extinct one. The folk songs are deeply rooted in the daily lives of the people of Assam, and they reflect their traditions, beliefs, and cultural practices. The most prominent among these folk songs are the Bihu songs, which are sung during the Bihu festivals in Assam. Apart from Bihu songs, there are other folk songs such as Tokari geet, Zikir, Ainam, Biyanam, Borgeet etc that are an integral part of Assamese folklore. These folk songs not only serve as a form of entertainment but also as a means of preserving the traditional values and beliefs of the state's people. A detailed categorization of Oral folklore are illustrated in the following diagram,

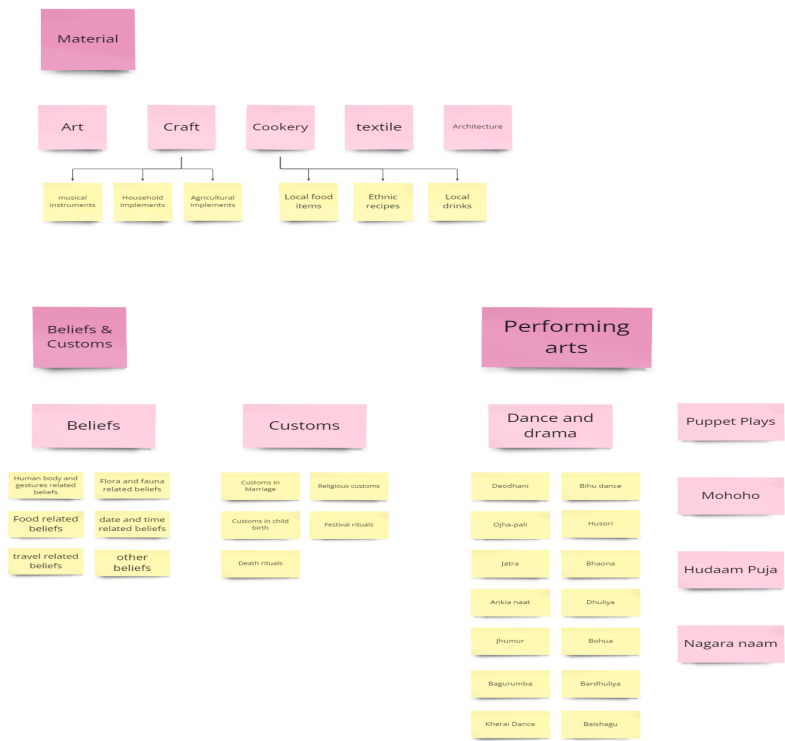
Tangible folklore, also known as material folklore, primarily refers to the traditional art and craft items and everyday household objects, such as cooking utensils, fishing and agriculture tools.



Traditional beliefs and customs are an integral part of Assamese folklore. In Assam, marriage customs are steeped in tradition and involve various rituals such as the exchange of gifts, betrothal, and the wedding ceremony itself. Death rituals in Assamese folklore involve several customs and beliefs such as cremation, offerings to the deceased, and mourning practices. These practices vary largely tribe to tribe. Food-related beliefs are also prevalent, with certain foods being considered auspicious or inauspicious depending on the occasion. In Assamese folklore, there are many date and time-related beliefs, such as the importance of auspicious times for starting new ventures or performing important tasks. These traditional beliefs and customs continue to be an

integral part of Assamese culture and serve as a means of preserving the rich heritage and traditions of the state.

Performing arts is another rich category of Assamese folklore. Many traditional dances and dramas, which are an amalgamation of multiple folklores, are still practiced in rural areas. Some of the popular ones include Deodhani, Bihu dance, Husori, Ojha-pali, Jatra, Bhaona, Ankia naat, Jhumur, and Bagurumba. In addition, there are other unique forms of performing arts, such as Puppet Plays, Mohoho, Hudaam Puja, and Nagara naam, that are distinct from the traditional dances and dramas.



6. Digital Archiving - Stages

Any typical archive has 7 working stages, which are essential for achieving its goal. Managing a digital archive involves several stages, including creation, acquisition, cataloging, preservation, storage, access, and evaluation.

1. **Creation:** The first stage of a digital archive is the creation of digital content. In traditional archives it starts with collecting data from fields by ethnographers, historians, archivists with a common goal set by institution or organization. This can involve scanning physical documents, capturing digital images, interviewing people or generating born-digital materials such as text documents, images, videos, or audio recordings. Digital archives may work with creators to ensure that content is produced in a format that is compatible with the archive's technical requirements.
2. **Acquisition:** Once digital content is created, it can be acquired by the digital archive. This process involves acquiring content from various sources, including individuals, organizations, or other archives. The acquisition stage may also involve negotiating the transfer of ownership, legal rights, or other issues related to copyright and intellectual property.
3. **Cataloging:** After acquiring digital content, it is necessary to organize and describe it in a systematic way that makes it easily discoverable and accessible. This stage involves segregating and categorizing objects, to help users search and locate specific items within the archive.
4. **Preservation:** Digital archives must ensure that the digital content they acquire is preserved over time. This requires implementing strategies to protect against data loss, damage, or degradation due to technological obsolescence or other threats. Before that physical materials are digitized. Preservation may involve creating backups of digital files, migrating content to new formats, and implementing policies for long-term digital preservation.
5. **Storage:** Digital archives must also have appropriate storage systems in place to manage the digital content they acquire. Storage systems must be scalable, reliable, and secure, and may involve using cloud-based storage solutions or local servers.
6. **Access:** One of the primary purposes of a digital archive is to make its content accessible to users. Access may be provided through a web-based interface, with various search and browsing tools that allow users to locate and view specific items within the archive. Access may also involve implementing policies for controlled access, such as user registration or authentication procedures.
7. **Evaluation:** The final stage of a digital archive involves evaluating the archive's performance and impact. Th

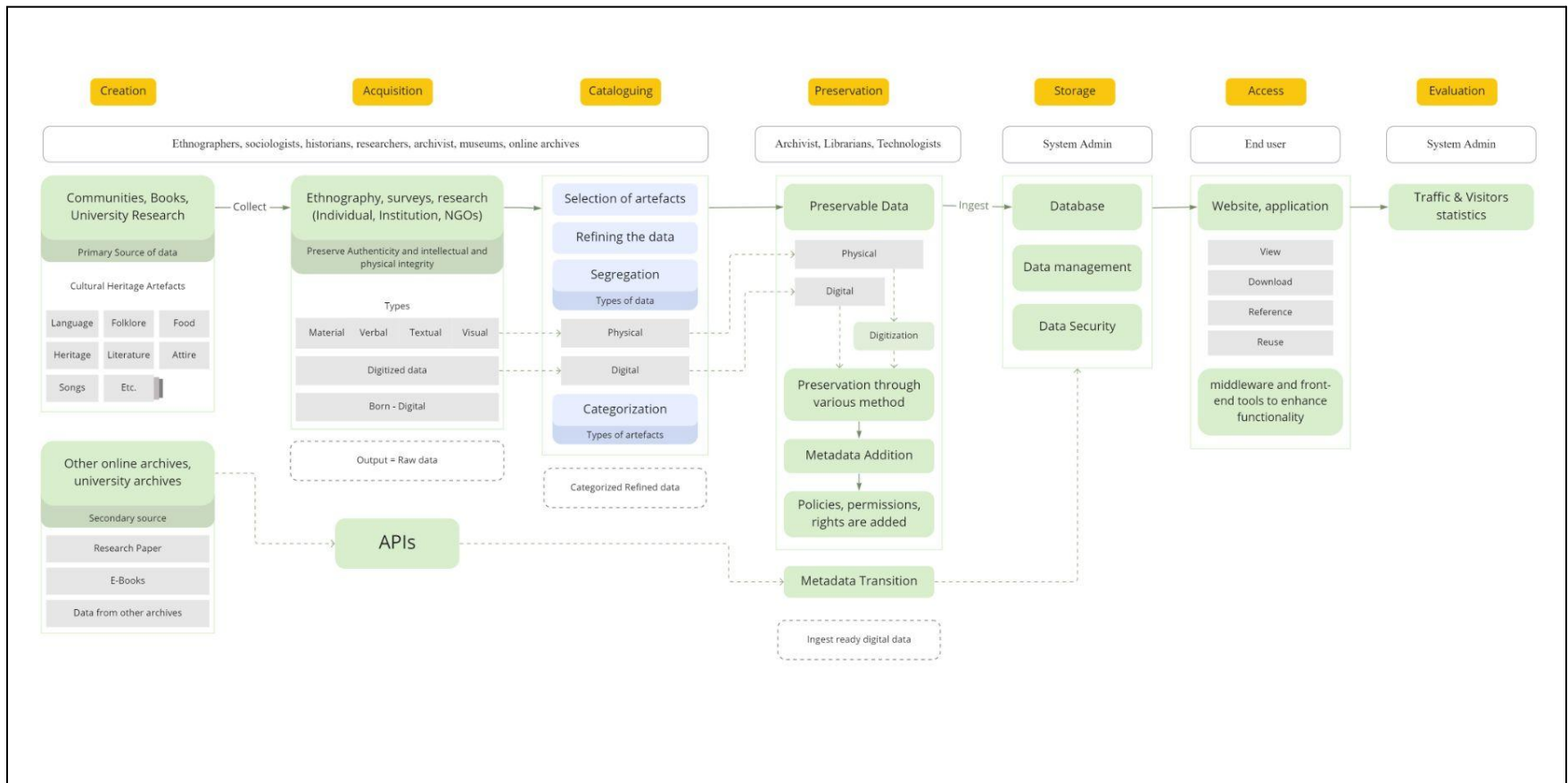


Fig. Working of a typical digital heritage archive

may involve analyzing user data to assess usage patterns, soliciting feedback from users, or conducting surveys to understand user needs and preferences. Evaluation may also involve assessing the archive's success in achieving its mission and goals, and making improvements to its systems and policies based on feedback and evaluation results.

These stages are implemented according to the needs of an institution or organization. I tried to map out detailed workflows of these stages considering cultural heritage preservation

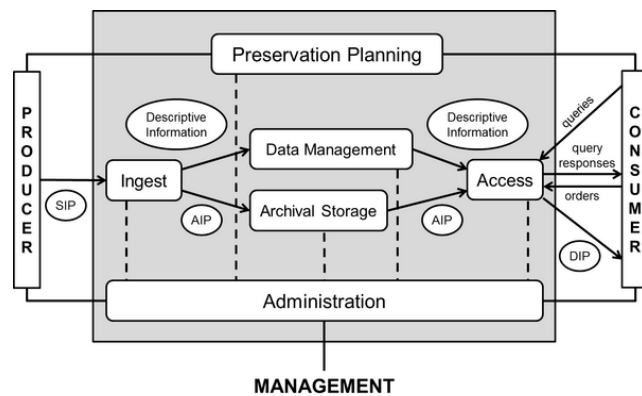


Fig 4: OAIS Workflow diagram

The creation of data begins with the collection of data from primary sources, which are communities that need their cultural heritage preserved. This is the raw data that researchers later process into archivable format, such as articles, books, or research papers. Books and university

research papers are also considered primary sources of data because their authenticity is nearly equivalent to that of raw data. Some already existing archives or online repositories may agree to collaborate with and share their database with APIs as a secondary source of data.

When completed, all acquired data, whether digital or physical, is processed to create a reusable online object and ingested into the database.

7. Stage-wise Problem Identification

The working flow diagram of the archival process help us to identify what specific tasks need to be done to get to the next stage and so on. It dissects all the stages into multiple substages and functions. Looking closely at each of these functionalities we Identify problems that accumulate and leads us to the failure of the basic goal of these types of archives. As Shown in fig 5, The individual problems at each sub-stage are identified and marked.

7.1. Problems at the creation data creation and acquisition stage -

Problems at the creation data creation and acquisition stage are one of the major problems that finally leads to the other problems in the later stage of the archiving process. Those problems are,

- With too many ethnic groups, hard to collect data for institutional archives
- Large chunks of books and research papers are not digitized yet, digitized or digital ones are scattered.
- Research papers are often not accessible by general public
- Translation to other language is still an issue
- Oral traditions are most likely to extinct
- No proper collaborative effort has been taken to use each other's(other online repository) resources.
- Stories are told by others, ownership gets transferred and the actual owner of the artifact many times doesn't get the recognition

Narrowing down these we get,

1. Collecting Raw data democratically that has a huge utility, becomes a hurdle in diverse regions
2. Connecting already available resources meaningfully is missing
3. Accessibility to the larger audience is not looked at
4. Less awareness among the locals and difficult to curate

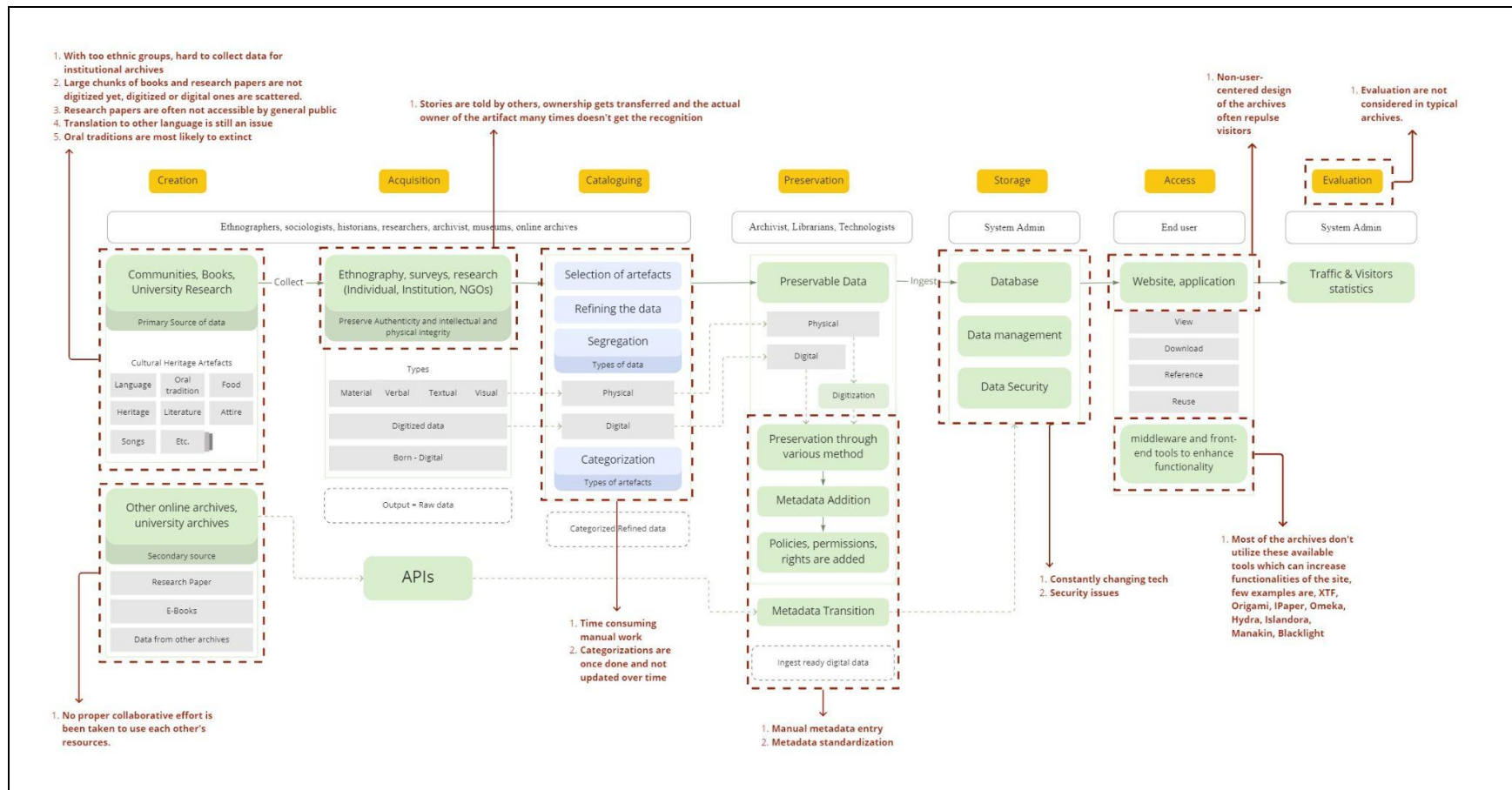


Fig. Problems at each sub-stage

7.2. Problems at Cataloging and Preservation stage -

Similarly problems at Cataloging and Preservation stage follows the below issues,

- Segregation & categorizing is a time consuming manual work, which can be automated
- Categorizations are once done and not updated over time
- Manual metadata entry for each data/artifact is laborious
- Metadata standardization and enrichment is required to access other repository data

These problems indicates,

1. Poor findability and data integration with respect to integrating other archives
2. Dependency on system admins and archivists makes this task labor intensive, so large amount of data is tough to handle

7.3. Problems related to storage -

The issues related to the storage are mostly technical and not in our scope, hence we'll not look closely into it for our project.

7.4. Problems related to Access Interface -

But again critical issues can be seen for the end user when accessing the digital objects in their screens. This comes from the poor organization of databases, not so user-friendly interfaces and lack of functionalities in order to facilitate major operations for information searching. Most of the archives don't utilize these available tools which can increase functionalities of the site, few examples are XTF, Origami, IPaper, Omeka, Hydra, Islandora, Manakin, Blacklight. This results in less engagement and sometimes failure in doing the primary thing that it is made for, providing information. In terms of user engagements and community building there is less work happening in this domain,

The last stage of any archive which is often not considered important is the evaluation. Is the archive successful enough for what purposes it was made for. Most of the time it is just measured by quantitative data such as site traffic and downloads, Which doesn't imply anything about the success of the ultimate goal of the archive. Purpose of creating the archive gets lost with time demotivating both users and stakeholders to continue with it.

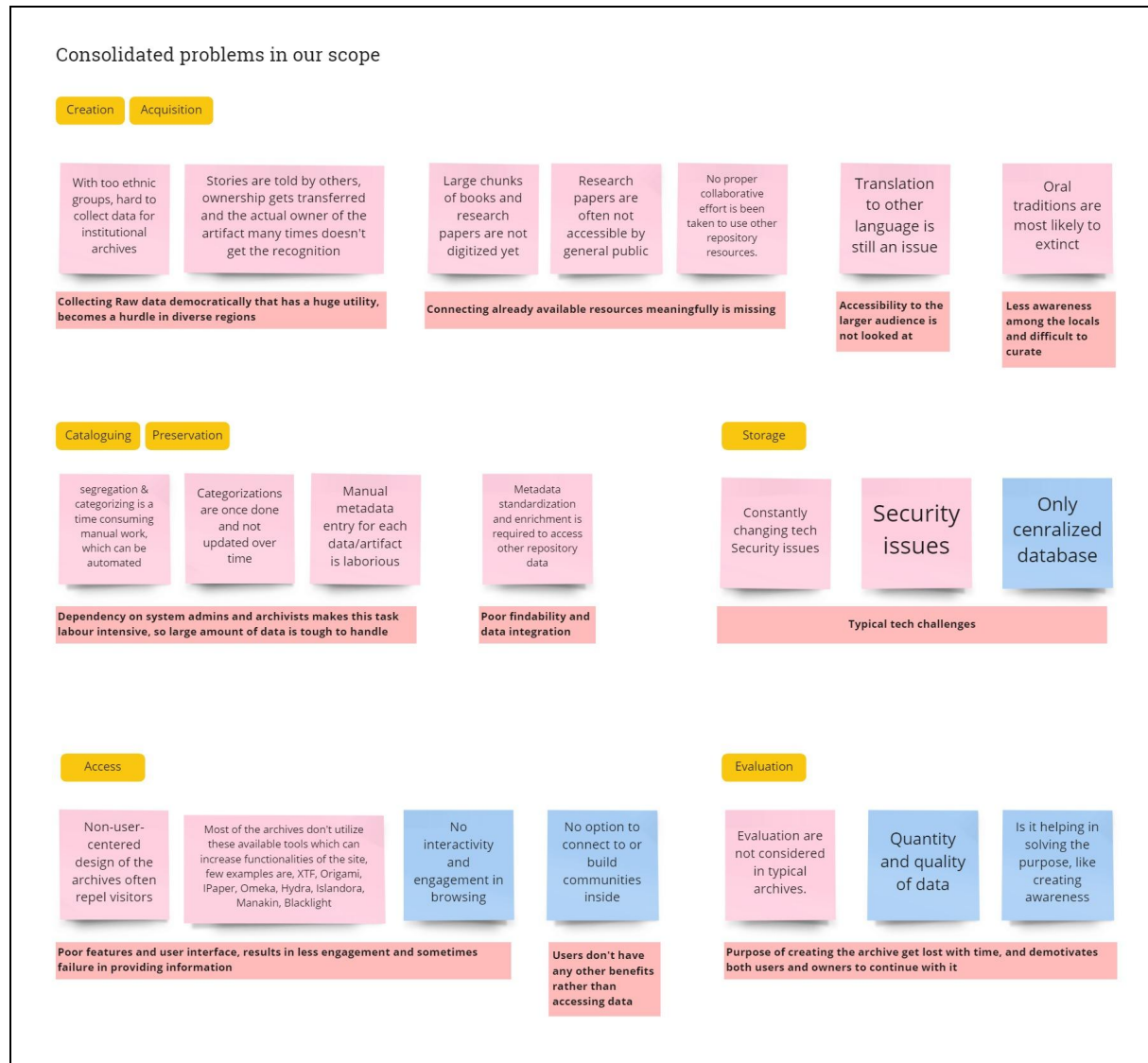


Fig. Affinity of problems at each stage

8. Preliminary system level ideations

The affinity mapping of specific problems which gave us generic problems helps us to look at the problem on a much broader system level. The same approach is considered while brainstorming solutions, for each of these general problem statements, an overarching idea has been assigned, and then taking a top down approach, based on that broad idea more specific ideations are done. This creates a huge opportunity to explore ideas without being constrained by the parameters of particular issues.

The broad ideas for each of the generic problem statements are as follows,

1. *Problem - Collecting Raw data democratically that has a huge utility, becomes a hurdle in diverse regions.*

Solution - Alternate methods of data acquisition, which increases user participation

2. *Problem - Connecting already available resources meaningfully is missing.*

Solution - A collaborative network of already available repositories

3. *Problem - Accessibility to the larger audience is missing because of the language barrier.*

Solution - Create features to help translate artifacts voluntarily

4. *Problem - Less awareness among the locals.*

Solution - Use the platform and content to create awareness

5. *Problem - Dependency on system admins and archivists makes this task labor intensive, so a large amount of data is tough to handle.*

Solution - The system should automate all these tasks based on contributors input

6. *Problem - Poor findability and data integration.*

Solution - Well designed information architecture and a common metadata schema wrt ISO standard

7. *Poor features and user interface, results in less engagement and sometimes failure in providing information.*

Solution - Simple intuitive interface with features that enhance the experience of searching and browsing folklore content

9. Scoping the project

My motivation to work on this project goes beyond academics. I envision implementing it in the real world. However, as I progressed and arrived at a point where a comprehensive solution to the problem was visible, it became necessary to re-scope the project to meet academic requirements. It is not possible for me to design and evaluate all aspects of the project, such as data collection, curation, database setup, stakeholder engagement etc. Collaboration is essential, and involvement of multiple stakeholders from various professions is needed.

Fortunately, I spoke to several potential stakeholders who expressed interest in this project, and they confirmed the enormous need and potential for a repository in the field of folklore. As mentioned earlier, Professor Meghna from the Folklore Research Department of Gauhati University informed me that they had been planning to create something similar for a while. She also told me about the new ministry of the Assam government, the "Indigenous and Tribal Faith and Culture," which is dedicated to preserving the state's indigenous heritage. All of these inspired me to first consider the big picture before concentrating on particular problems to be solved.

The project's scope has now been redefined to include the following objectives:

1. Designing the system map covering all the relations and user flows, which include the stakeholder mapping, repository components, and data flows.

2. Identifying alternative methods for data collection and curation, and testing them out.
3. Designing the repository website.
4. Developing a prototype of the website testing it out with users.

I'm not looking at -

1. Curating data for the repository
2. Database management, metadata creation, storage and other backend technical infrastructure
3. Security and copyright aspects of online archives

10. Ideating alternative methods of data acquisition

10.1. Types of content

Based on the insights provided by experts and research, it has been determined that two types of folklore content are needed for the repository:

1. **Curated Folklore Content:** To address concerns regarding trust and authenticity, the primary focus should be on verified and authenticated content. Therefore, the main content of our repository will be carefully curated, a responsibility that can be undertaken by the folklore research department of Gauhati University.
2. **Raw Content:** This category will consist of media files, links to external resources, books, and research papers. Including such raw content alongside the curated material serves three purposes. Firstly, it showcases the diversity of each artifact, enriching the repository's knowledge base. Secondly, it allows for the identification of new artifacts that may not be listed in the curated collection. Thirdly, By exploring these raw content options, researchers and enthusiasts can contribute to the creation of new categories and expand their understanding of folk artifacts and conduct follow up research interests.

10.2. Methods

Four ideas of collecting raw content has been identified, which are,

1. Community Volunteers
2. Researchers and Scholars
3. School and College students
4. People with interest through social Media

Taking into account the project's scope and the feasibility of evaluating different ideas, I have chosen the third idea of collecting content from school and college students. Engaging volunteers and finding interested individuals through social media might prove challenging in terms of participation and testing these methods. Similarly, working with researchers and scholars raises concerns regarding permissions-related issues. Hence, I have decided to opt for the third method to conduct the study and assess its viability. Furthermore, I specifically focused on school students, as they tend to exhibit more curiosity and interest in such activities compared to college students.

Contributors	Community Volunteers	Researchers & academicians	School and college Students (Specially Rural Area)	People with a common interest in folk culture - through Facebook and WhatsApp groups
Why?	Interested people are there to work for their communities, this includes students, artists, social workers, NGOs, etc.	Have lots of raw data collected for the purpose of their research, which can be utilized along with their research works.	Many of the folk cultures are still alive in villages and rural households. College and school students can collect them while realizing their importance	To Initiate discussions and awareness and build an online community of people to connect and share knowledge
Motivation	Contribution towards upliftment of community Incentives Basic Intermediate Monetary, Rewards, Redeemable points, cloud storage Recognition in the platform	Recognition in the platform Certifications Responsibilities towards their community	Academic requirement Certifications Competitions	Community spirit
Contributions?	• Photos • Videos • Audio clips • Scanned documents • Links to other resources • Write ups(Descriptions)	• Photos • Videos • Audio clips • Scanned documents • Research papers • Articles • Links to other resources	• Photos • Videos • Audio clips	• Photos • Videos • Audio clips • Write ups
Digital literacy	• Novice & Intermediate • Mostly use mobile phone	• Intermediate & Expert • Mostly operate from Laptops	• Intermediate • Mostly use parents phone • College students use phone	• Novice-expert • Mostly use mobile phone
Possible Tools and methods to contribute	Google form Manually enter data in the repository portal Whatsapp Chatbot Inbuild chatbot of in the repository	Manually enter data in the repository portal A browser extension	Graded assignments Whatsapp Chatbot	Admins will be collecting valuable contents and send it to repository Scraping group data

Fig. Four alternate methods of data acquisition based on various parameters

10.3. The study

The study was conducted in a Bodo medium school in the Kokrajhar district of Bodoland(Assam). I have selected specifically the Bodo tribe rather than going for generic schools where there are a mix of all the communities, because I wanted to see how much collection I can have from a few students of a particular community. I have chosen the class 9th standard students so that a level of maturity among the students exists and there is no stress of board exams too. There were 45 students in the classroom(same proportion of boys and girls). Before actually conducting the study I discussed with the class teacher, and took necessary permission from the Director of the school.

The study was basically an assignment which was given to the groups of students. The assignment was to document folklores that are found in their home, elderly people, and in their neighborhood. Photographs, Videos and Write ups were the preferred mediums of documentation. The collected media of artifacts are then told to be sent to my whatsapp.

Firstly they're introduced to various folklores of the Bodo community by the teacher who also engages them in fruitful discussions about their own culture and traditions. Later they were told to group together and choose one or two categories of folklore that they likes from the blackboard, these categories were,

1. Food Habits
2. Household materials and Agricultural tools

3. Songs and Dance
4. Musical Instruments
5. Dress and Ornaments
6. Oral folklore - Tales, Myths, Legends, Riddles etc.

6 groups were formed and each one took each of the topics and they took around 2 weeks to submit a total of **138**

instances([Link to all the contents](#)) of artifacts compromising Photos and write up. Numbers of collected data are as follows,

1. Food Habits - **6**
2. Household materials and Agricultural tools - **23**
3. Songs and Dance - **23**
4. Musical Instruments - **6**
5. Dress and Ornaments - **34**
6. Oral folklore - Tales, Myths, Legends, Riddles etc - **46**



Fig. Giving instructions to school kids about the task

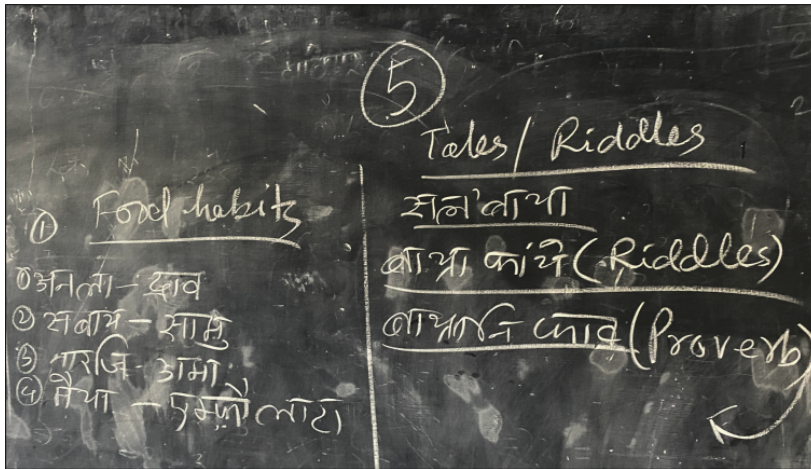


Fig. The class teacher talking about folklores

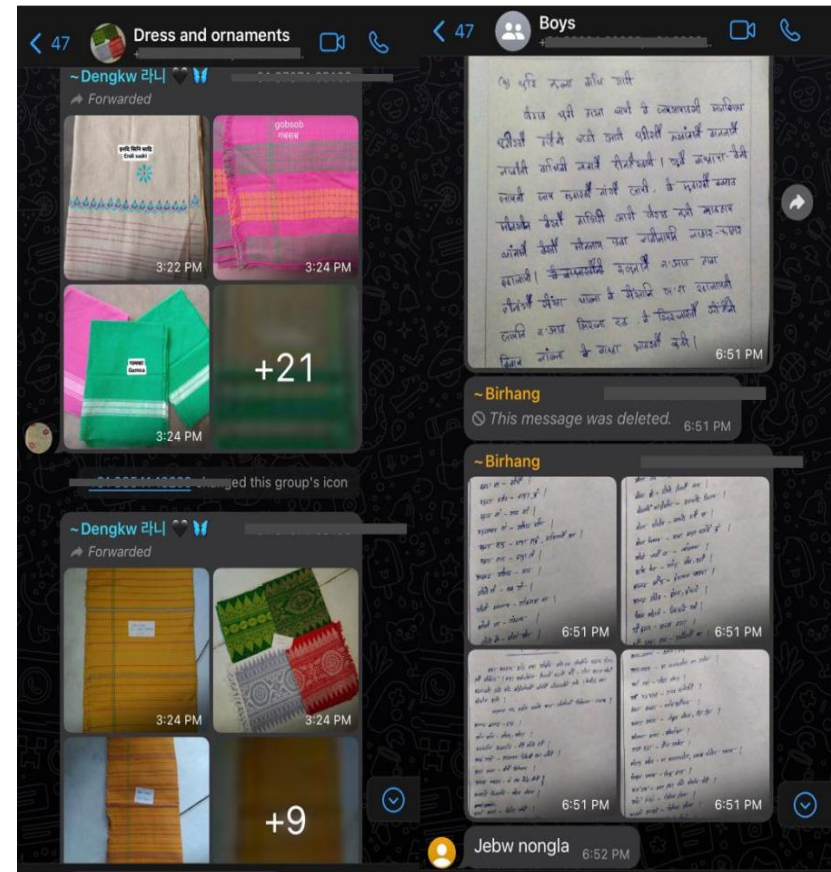


Fig. Files are sent through whatsapp

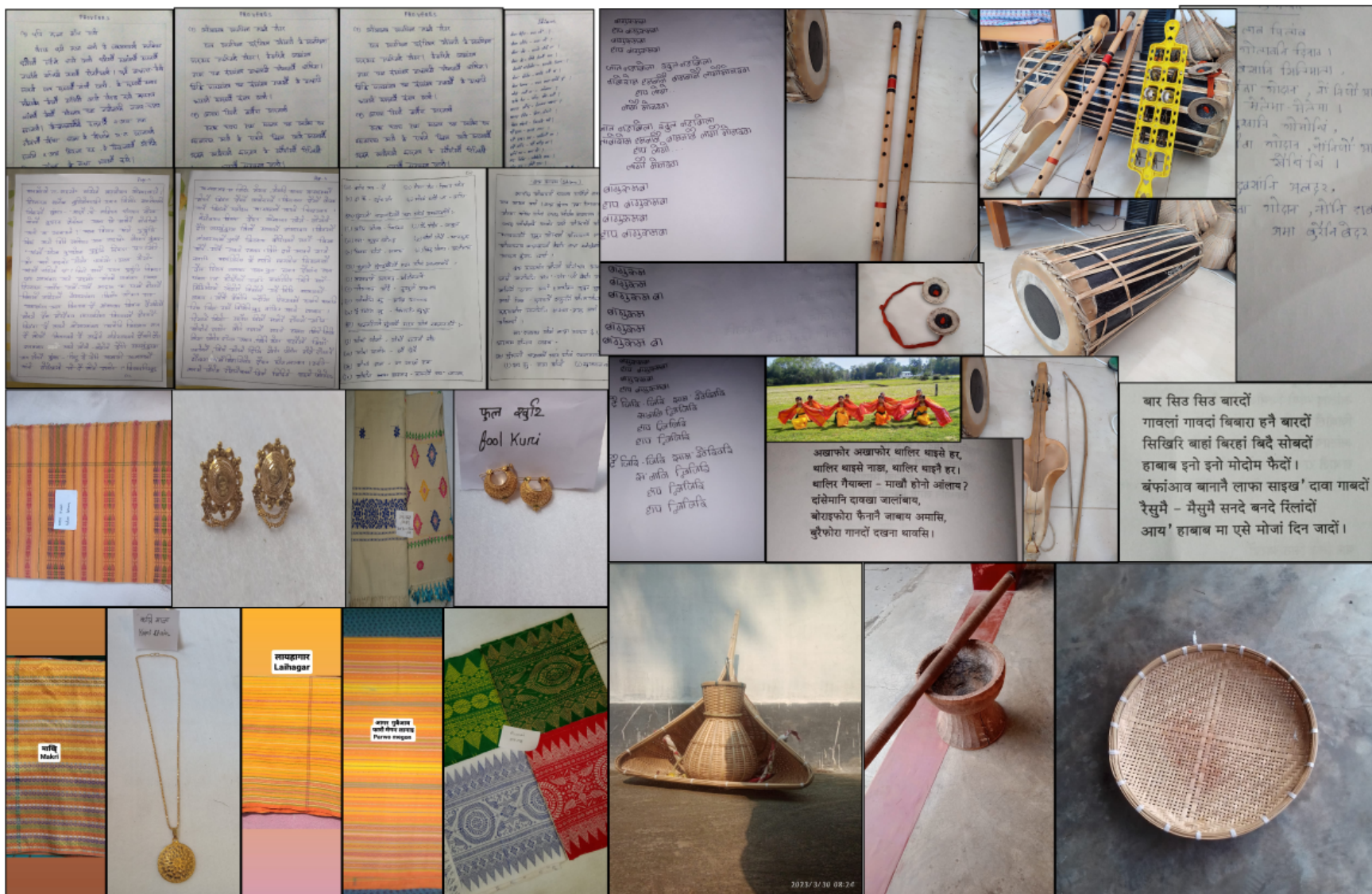


Fig. Contributed content by the students during the study

10.4. Reflections

The preliminary study yielded significant success, showcasing the potential of the tested method in sourcing folklore data when implemented effectively. Key takeaways from the study include,

1. the importance of providing an informative class on the specific community's folklore, followed by a comprehensive instructional manual or course on documentation, which will result in higher quality content.
2. Implementing this method in rural schools of indigenous communities, particularly those conducted in their own language, holds great promise for successful execution.

11. Stakeholder Mapping

After evaluating one of the four methods and realizing it's potential, We can assume to create a huge content pool from these sources. Based on the assumptions that the other three methods will also contribute to the content pool, a stakeholder map is created to think from a system level. Our main stakeholder are,

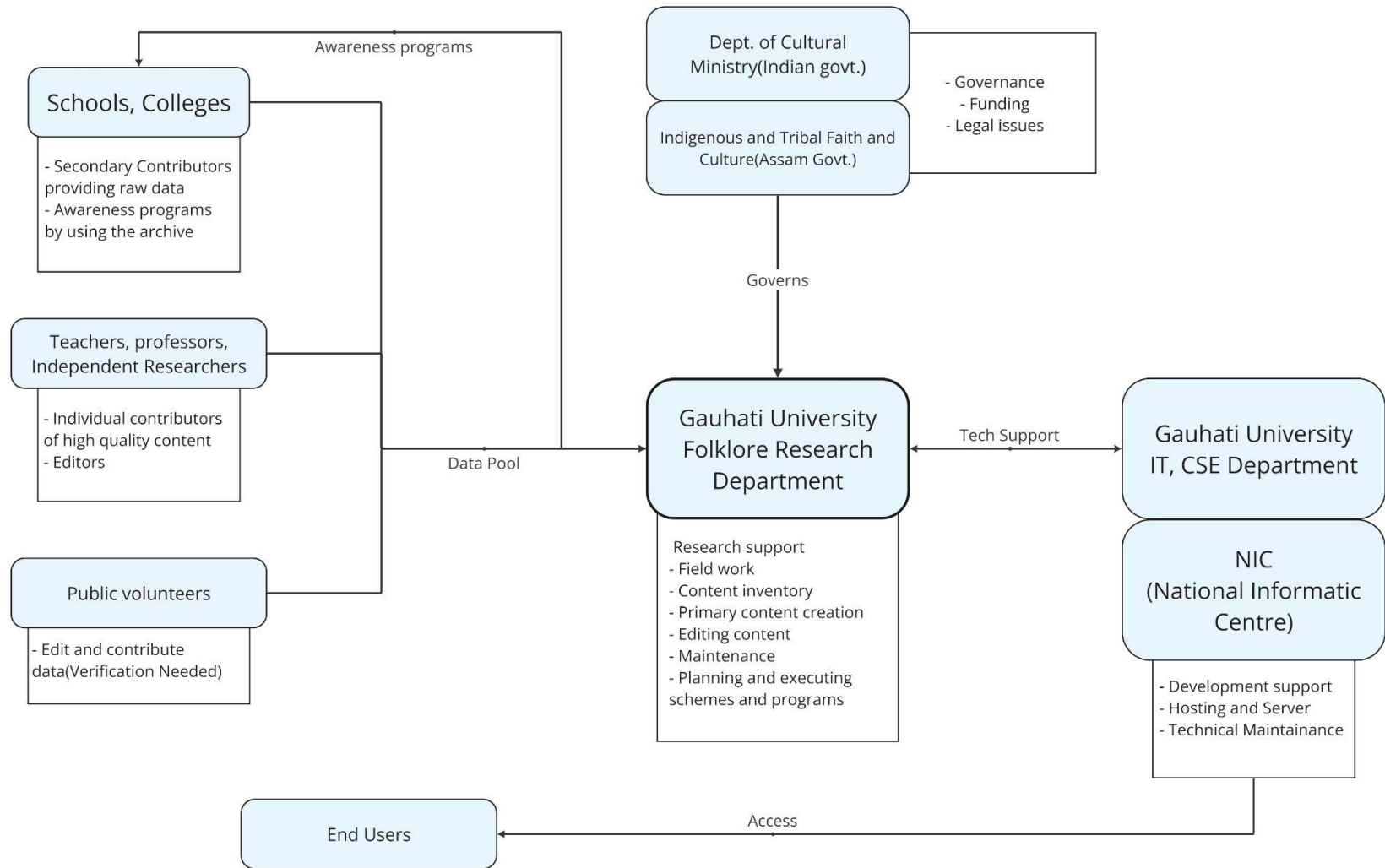


Fig. Stakeholder Mapping

11. Designing the repository website

11.1. Setting out goal

A list of 5 goals has been set for the repository archive to achieve, which are based on primary and secondary research. These goals are further elaborated through a "what, why, and how" chart, providing detailed insights. The "what" aspect is associated with the primary objective of each goal, while the "how" component outlines the key features that must be designed to accomplish each goal successfully.

What Specific Objective	Why Goal	How Features
1. Easy accessibility of variety of folklore content	Information is either missing or scattered in various places	1. Advance and intuitive search 2. Easy searchability across all categories 3. Inquiry for missing data 4. Easy visible distinction between original information and fetched info 5. distinction between types of media categories 6. Editing/Input feature 7. Translation 8. Intuitive on spot dictionary

What Specific Objective	Why Goal	How Features
2. Proper categorization of artefacts	easy searchability and navigation	1. Well-designed information architecture of artifact categories
3. Engaging users through multimedia information	To form a narrative or story about any specific artifact	1. Similar artifacts of other communities 2. Linking multimedia wherever needed (Framework) 3. Associated folk elements with relevant connections 4. Associated geographic locations and communities
4. Making input and editing easier	Enrichment of content	1. Instantly available editing option anywhere 2. Simple interface 3. Verification mechanism
5. Knowledge sharing and community building	Connecting like-minded people	1. Group creation with common interests 2. Individual chats to text and connect 3. Discussion channels on different topics

11.2. Ideations

Rough sketches of Ideas.

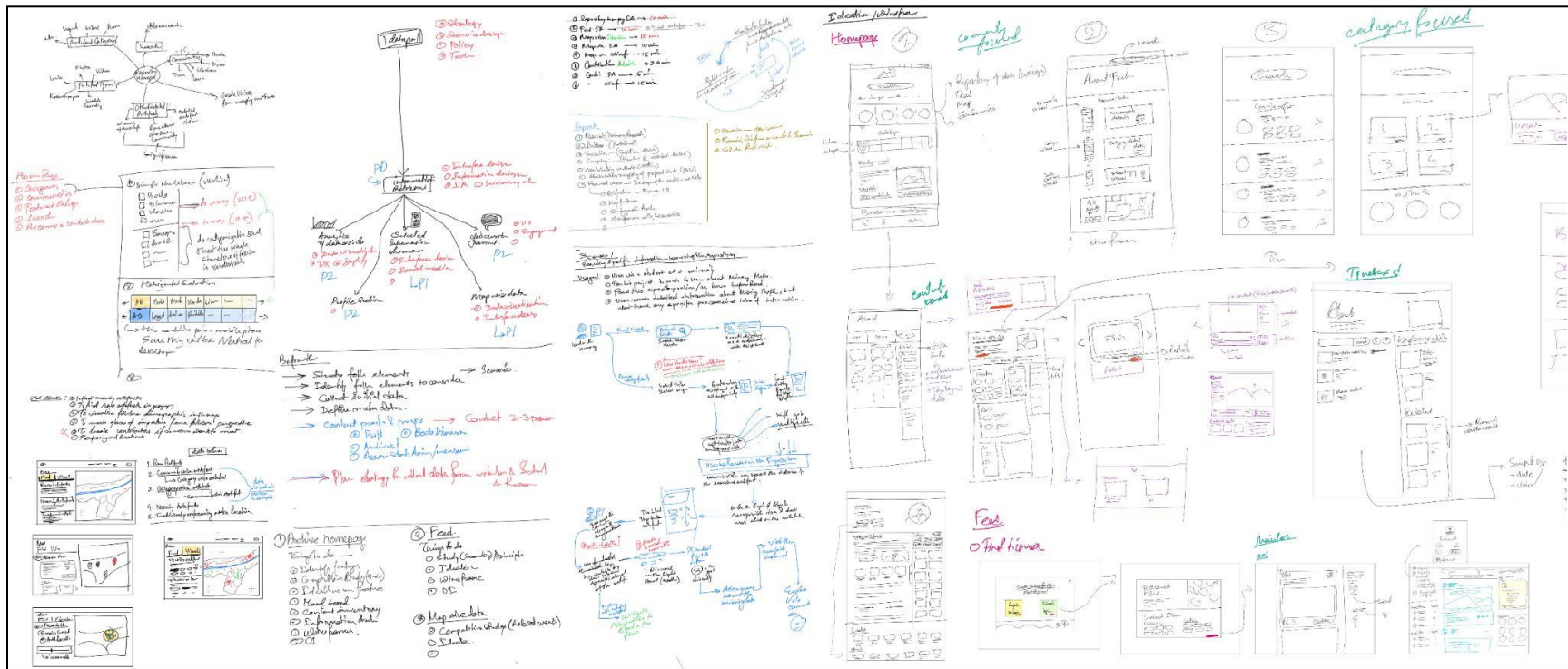


Fig. Ideation sketches

11.3. Site Map

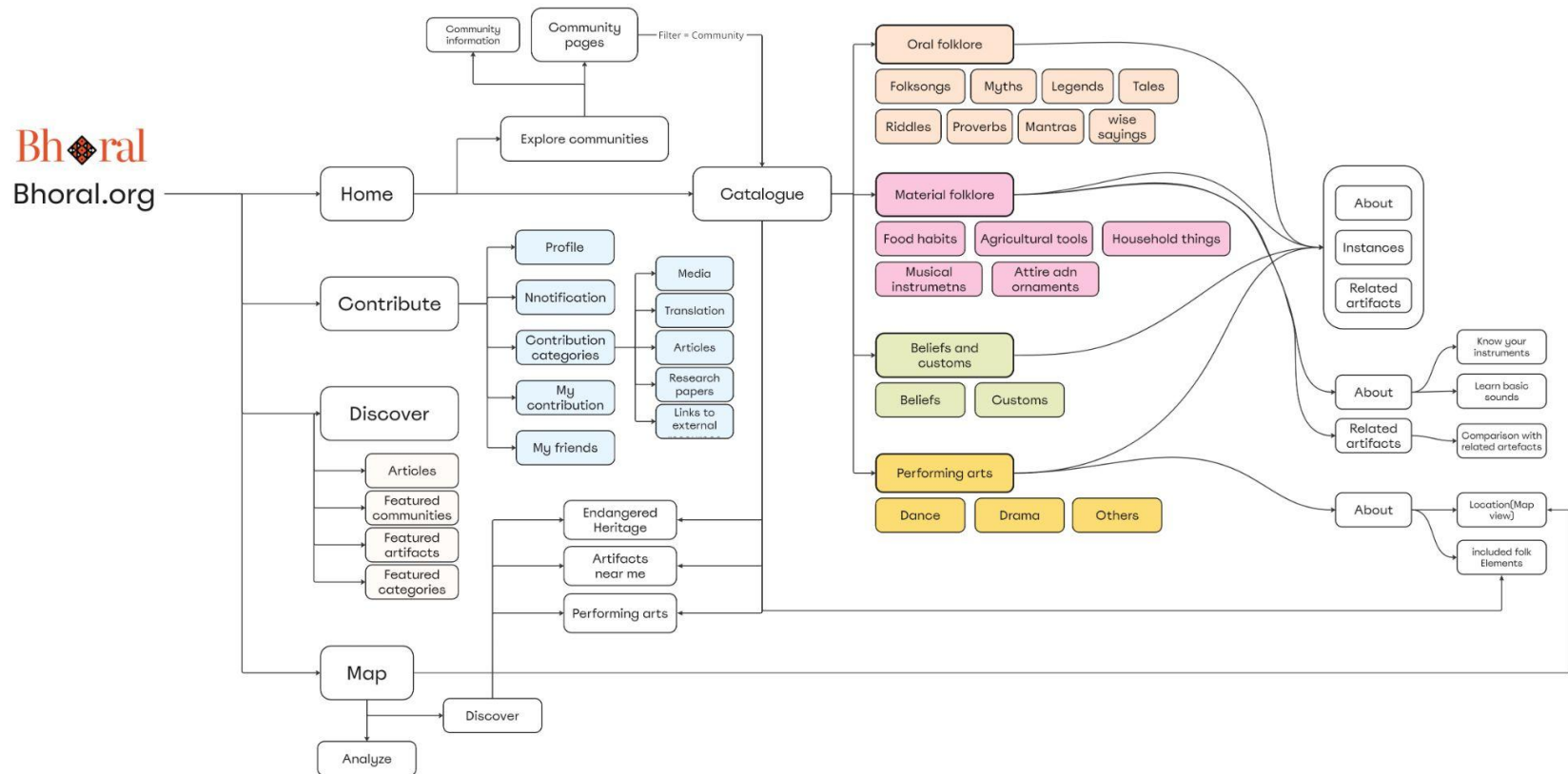
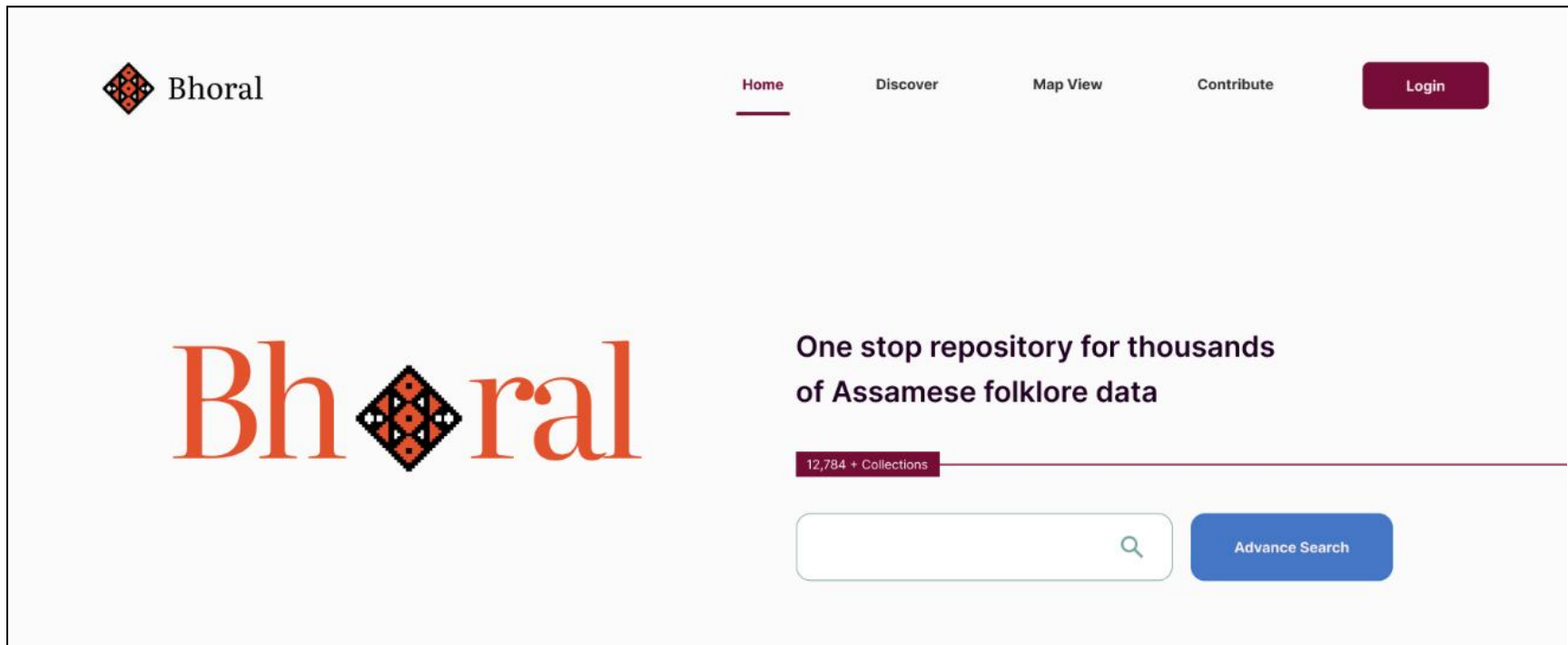


Fig. Detailed site map

12. Final Design

‘Bhoral’ - Translates into Assamese ভঁৰাল, which is a dedicated place in the traditional houses in Assam in where items are preserved for future use, specially threshed rice grains. I decided to go with this name as this project also resembles the same purpose, but in the field of folklores. The logo is a simple typographic logo where in the center a traditional assamese handloom motif is used in the place of letter O. Colors are taken from Assam’s cultural symbol Gamusa.

Bh  ral



12.1. Repository Home Page

It contains the search and advanced search options followed by a category page where the user can hover over the community names and see details about them and go to their respective archive page. It also has data about their population demographics encoded. These community lists can be sorted according to population count and alphabetically.(Fig)

Then it continues with an all community catalog of folklores(Fig), which is again divided into 4 sections as the four main categories of folklores -Oral, Material, Beliefs and performing arts. They are interactive in nature , during default state only title is visible but when the arrow button is clicked it expands downwards revealing a basic description about the category and sub-categories listed, The sub-categories are represented using icons, and bilingual support for these names are given in english and assamese. The View repository button will take you to the dedicated category page of that particular category.

It is followed by three highlighted sections of the site's other features, respectively Discover, Contribute and Map View.

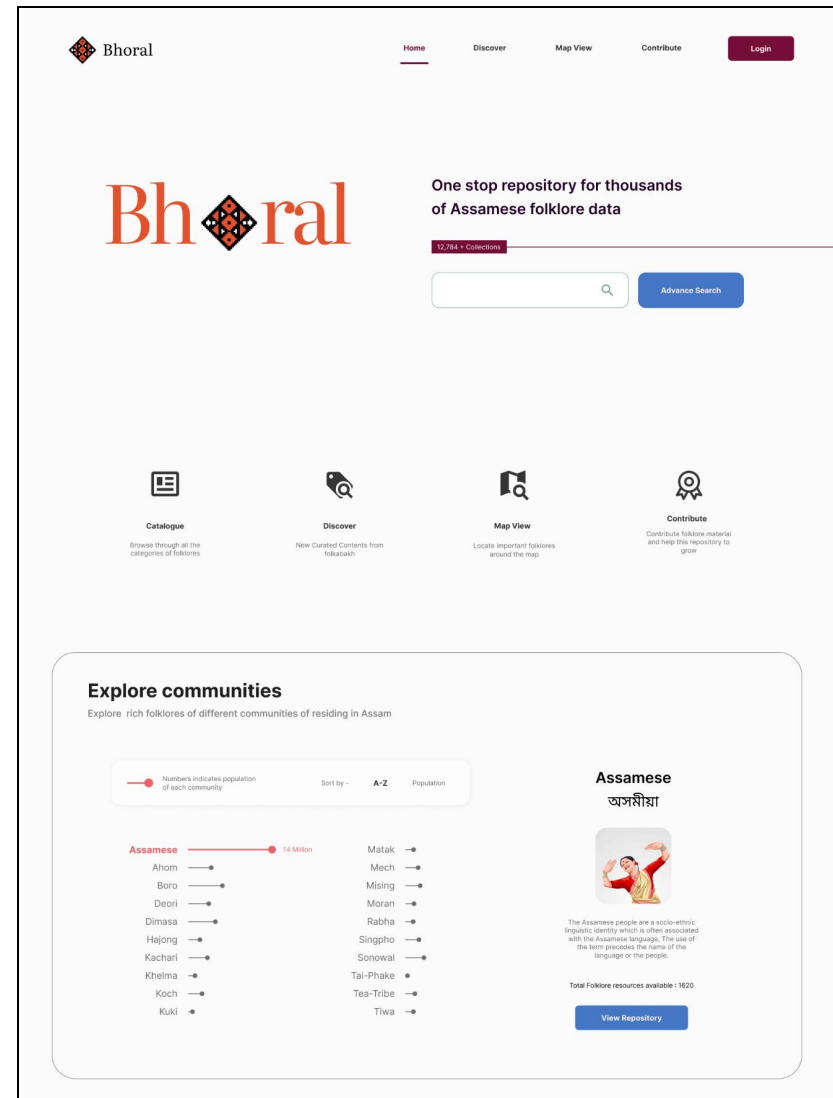


Fig. Home page(Community Browsing)

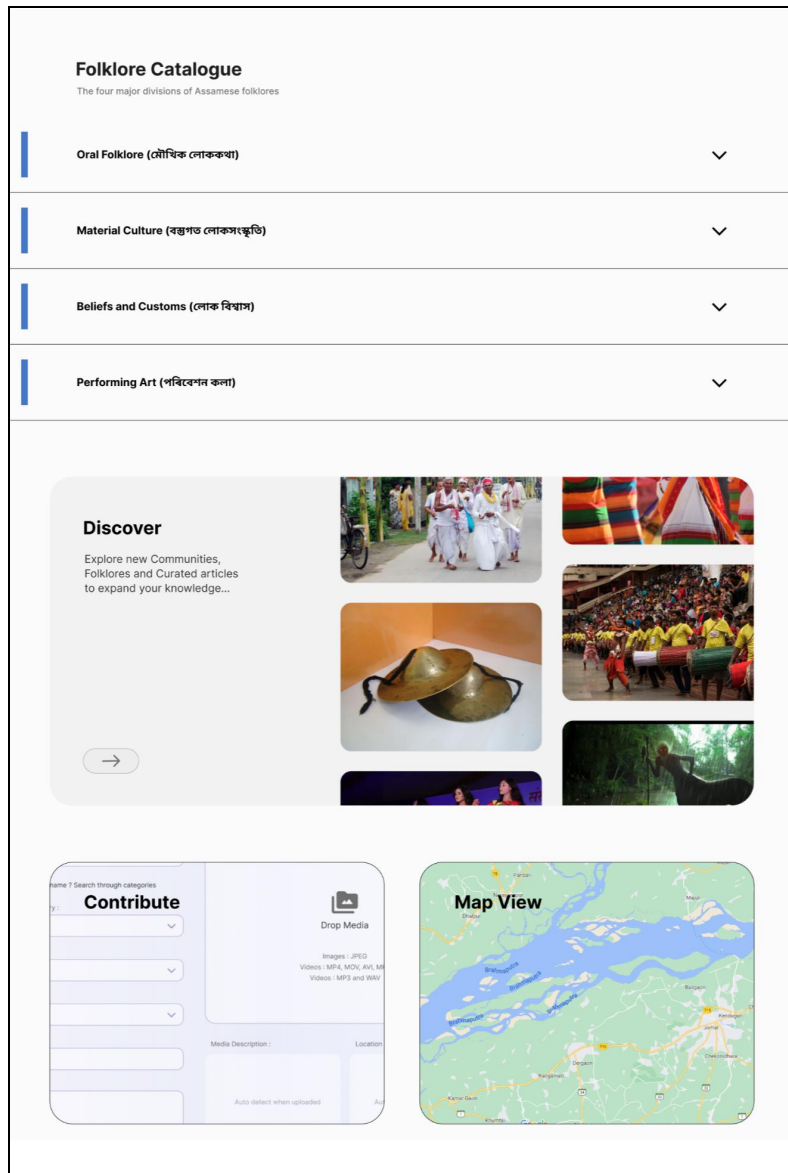


Fig. Lower half of the home page

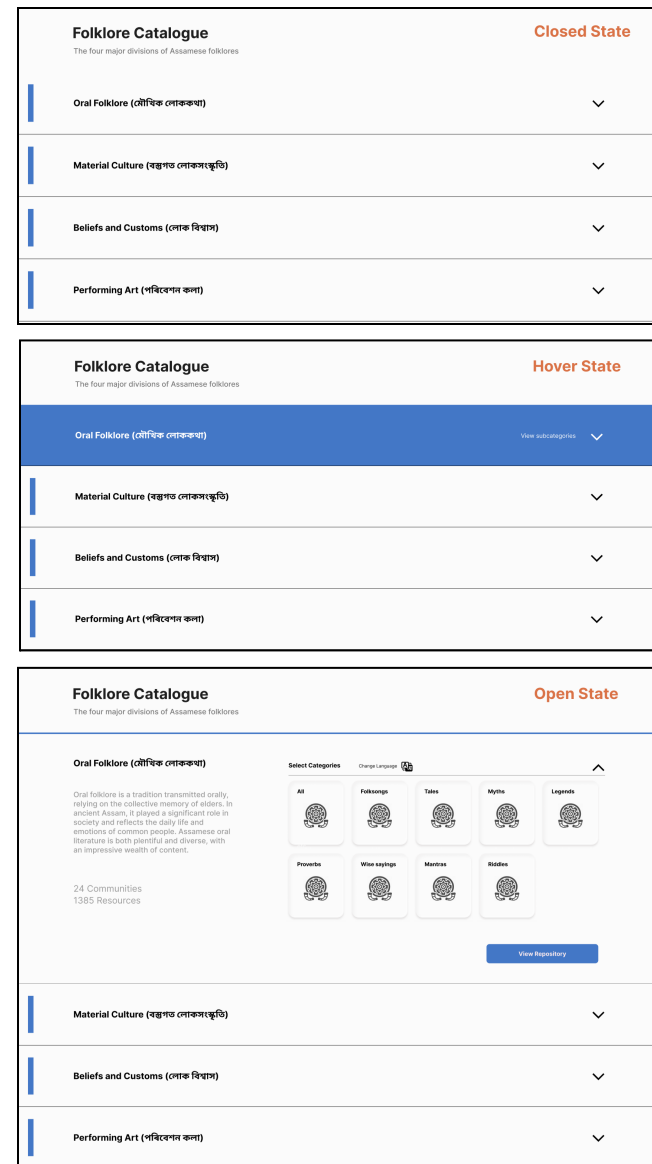


Fig. Expandable folklore category section

12.2. Category Page

Each of the category page has three sections,

The first section is a description about the category along with a featured media, The second section is all the interactive options and filters like, search community filter and all the sub-categories listed horizontally, by default the items are sorted by popularity, which is measured by the total likes in each sub category.

Each of these subcategories again have categories based on the type of subcategory, for example Folk Songs can be again categorized into various types. Some sub-categories do not have divisions, in which case folklore artifacts will be listed in a single category.

All the artifacts have distinct images along with their name and their respective community names written below the name of the artifact. Upon clicking these container boxes of artifacts users will be taken to the respective artifacts page.

[Real photos needs to be added]

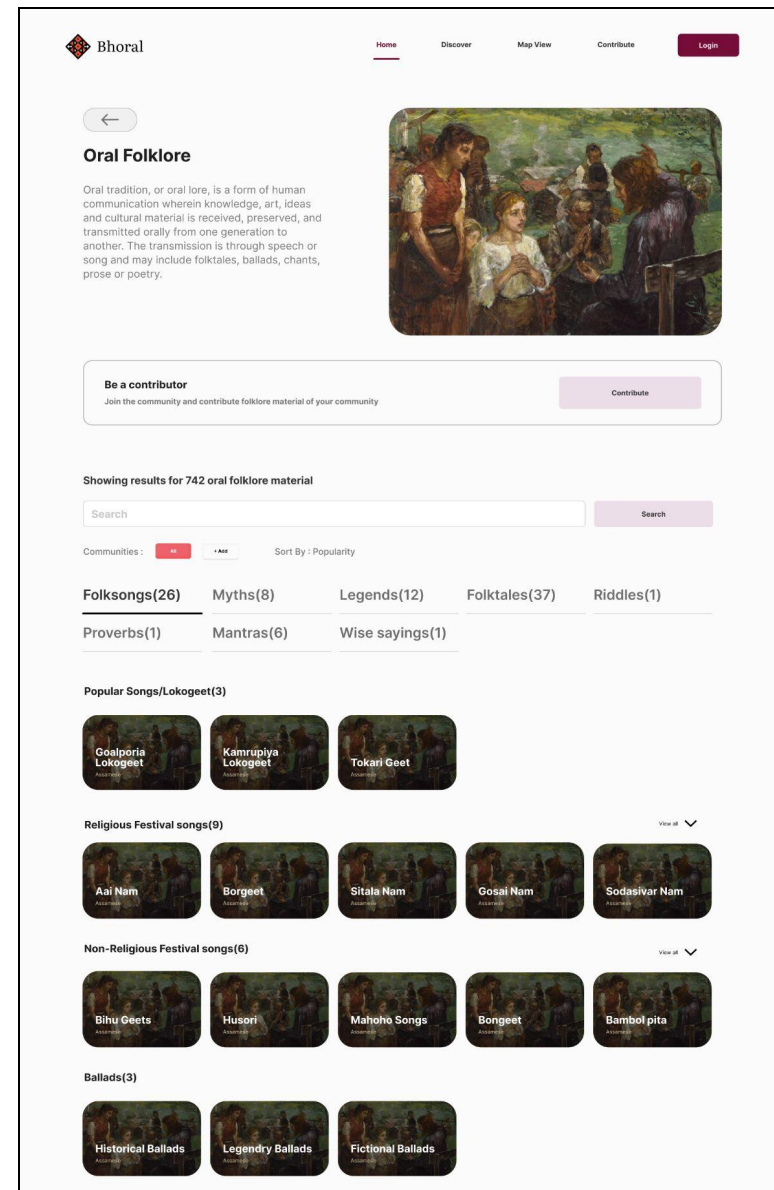


Fig. Category Page

12.3. Artifact Page(Oral Folklore)

The artifact page also follows the same layout as the category page, it has three sections -

1. About - All the curated content and featured media files with references are here.
2. Instances - The instances section contains all the media files and contents that are contributed by the public, which also includes contents contributed by school students. With the help of filter option users can view only the types of content they want to see, like photos or research papers. From this section itself users can contribute directly to the repository.
3. Related artifacts - The third section contains similar artifacts of the same community and among other communities.

[Real photos needs to be added]

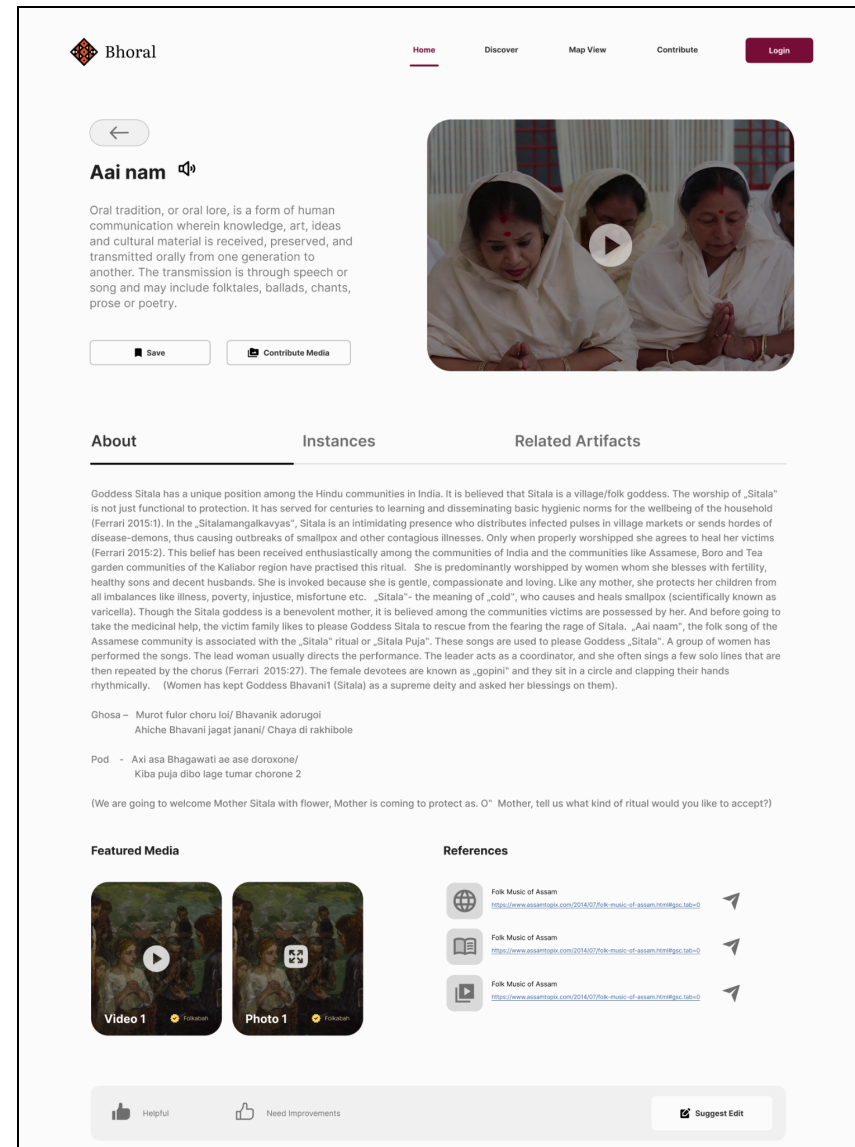


Fig. Artifact Page - About(oral folklore)

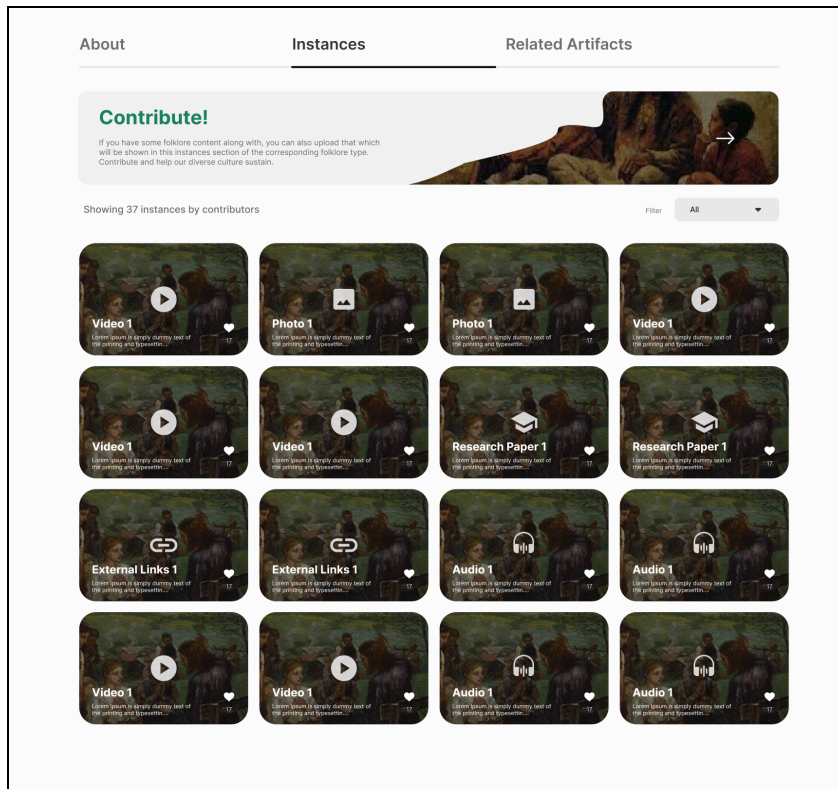


Fig. Artifact Page -instances(oral folklore)

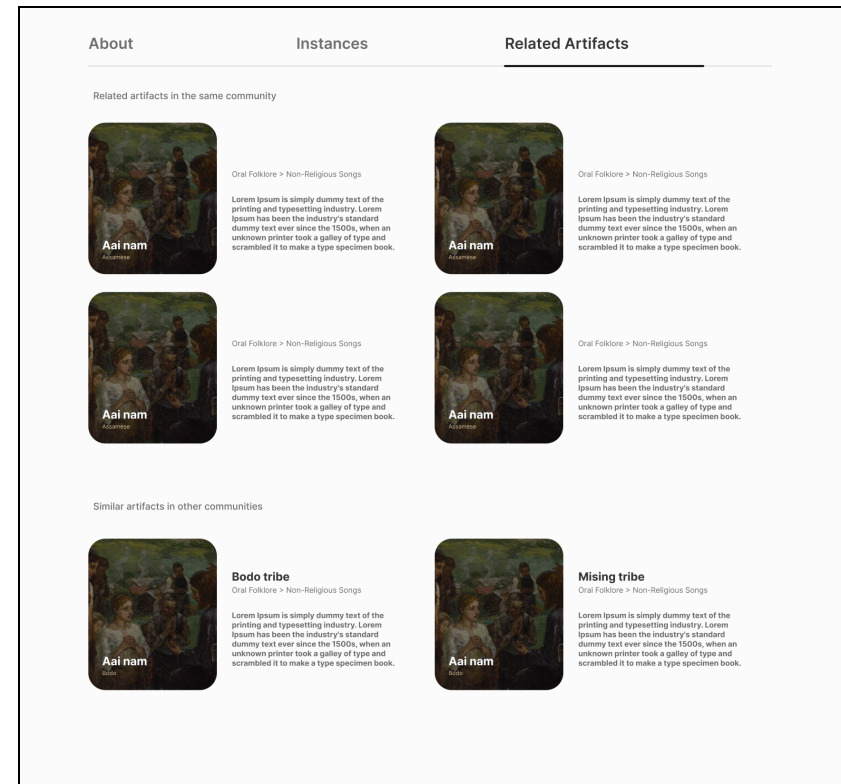


Fig. Artifact Page - related artifacts(oral folklore)

12.4. Artifact Page(Material Folklore)

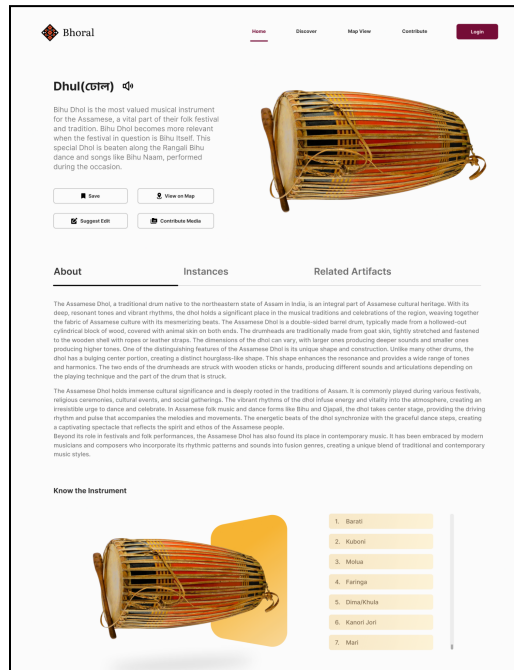


Fig. Artifact Page(Material Folklore)

Two new designs are introduced in the about section, the first feature enables users to interact with the material artifact (Here it's a musical instrument) to see through the individual parts of the artifact when hovered over to the part's name on the

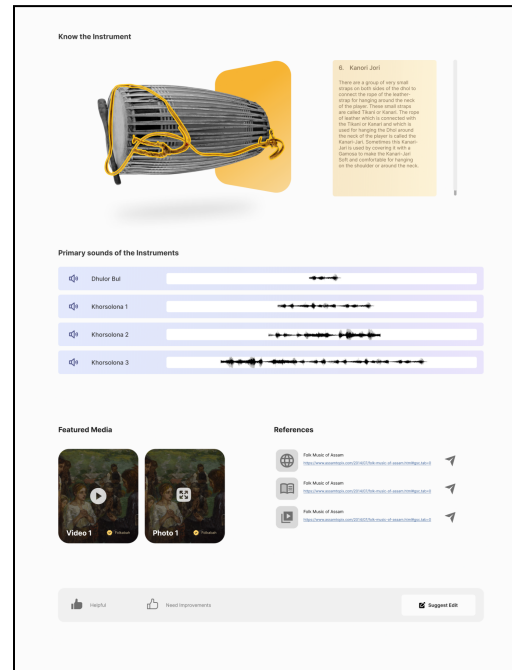


Fig. Dissecting the parts of a Dhol

right hand side list, it also gives a comprehensive description of the part. The second feature is about giving the experience of the sound of that instrument. Recording of the fundamental sounds of the instruments can be of great help.

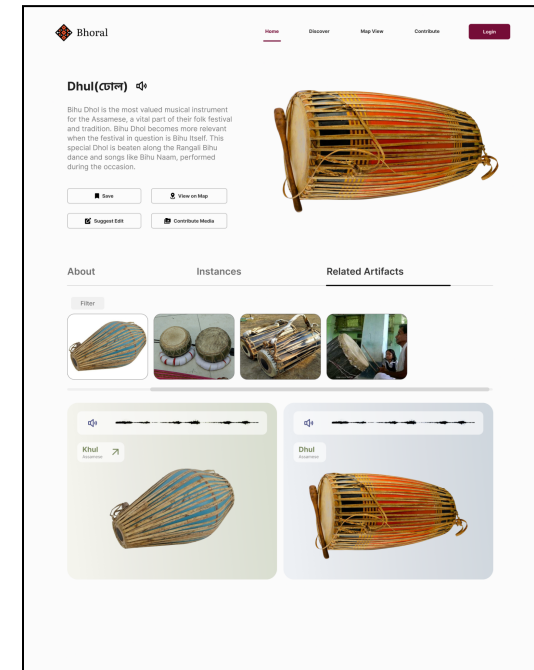


Fig. Comparing similar musical artefacts

The related artifacts section of instruments is designed such in a way that helps in side by side comparison of the instruments, along with that comparison of sound is also possible. This feature can be extended to other material folklores also.

12.5. Artifact Page(Performing Art)

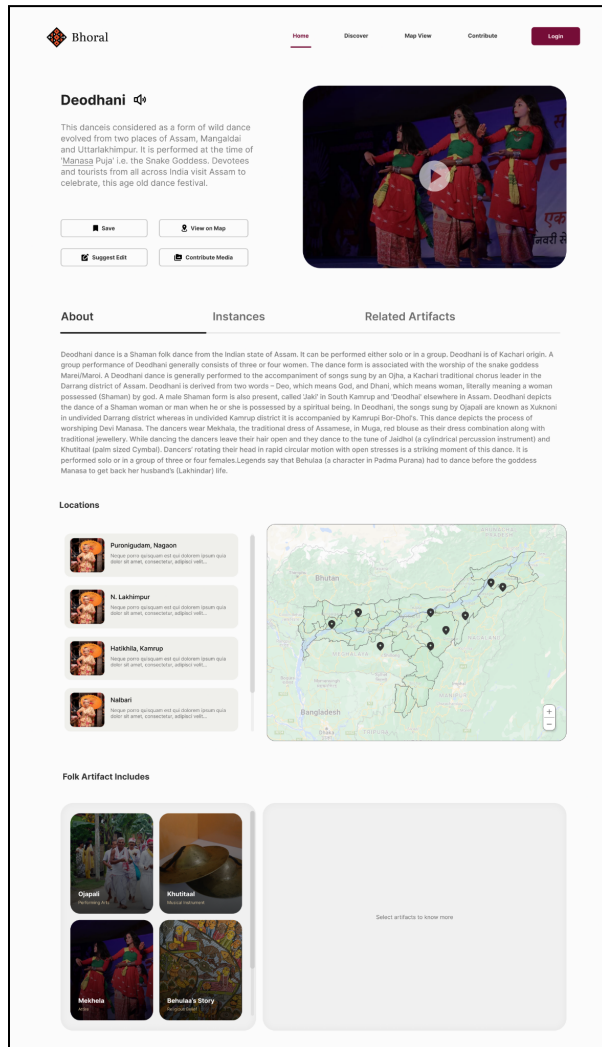


Fig. Artifact Page(Material Folklore)

Designing the artifact page for performing arts also needed new design interventions as this category of folklore is combination of multiple folklores, so these other element are also needed to be mentioned, moreover same performing arts vary according to geographic location, so the map view feature is linked directly with this artifact page.

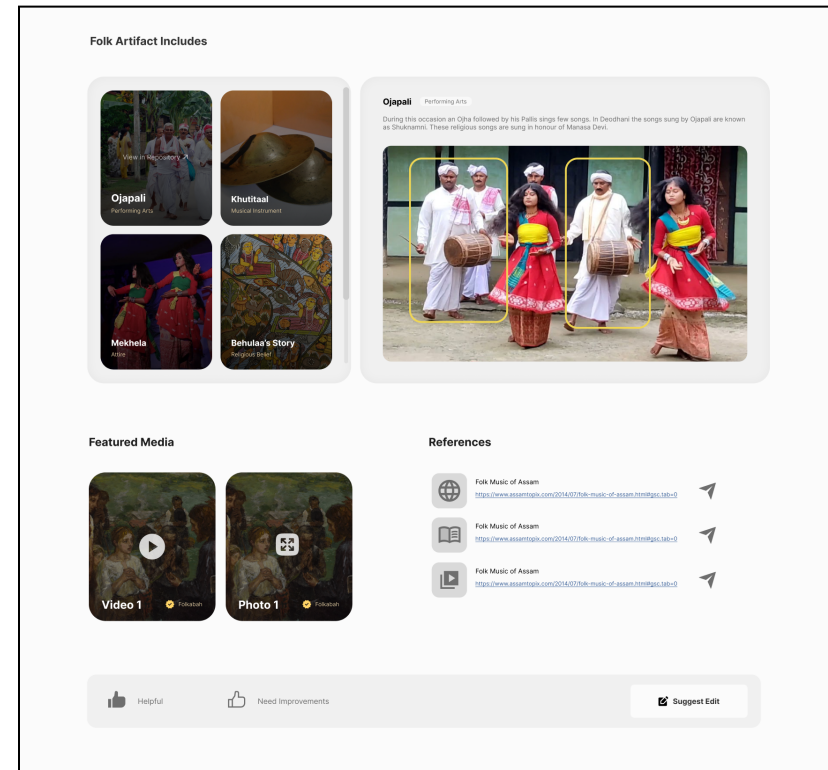


Fig. Artifact Page(Material Folklore)

12.6. Contributed content

The contributed contents from various sources are present in the instances section, when opened, these instances will be popped out into an overlay, the overlay consist of an enlarged view of the media along with other information based on the types of the instance

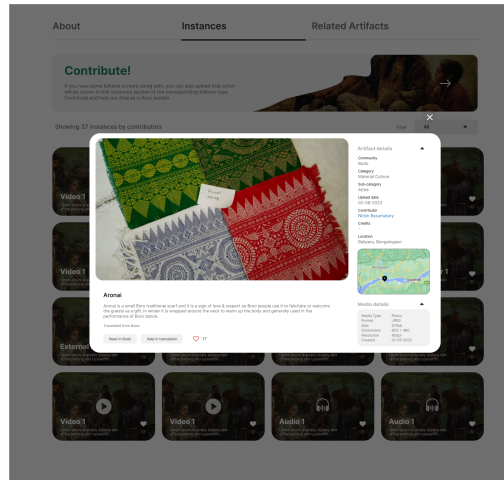


Fig. Contributed content(Type-Photo)

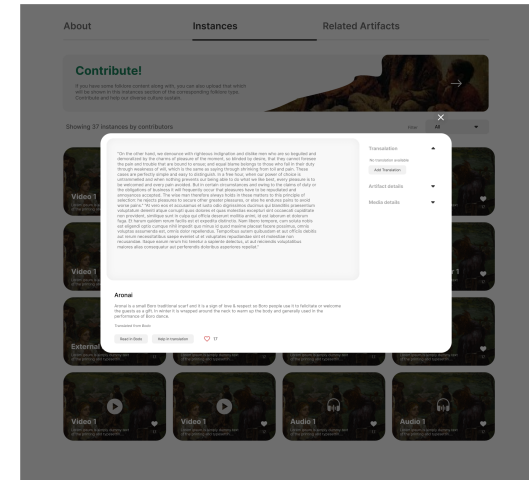


Fig. Contributed content(Type-Text)

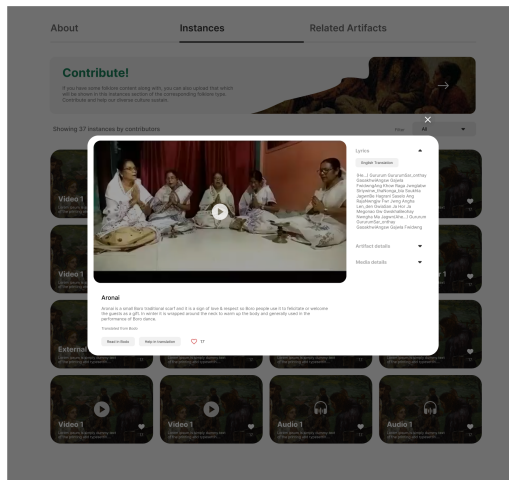


Fig. Contributed content(Type-Video)

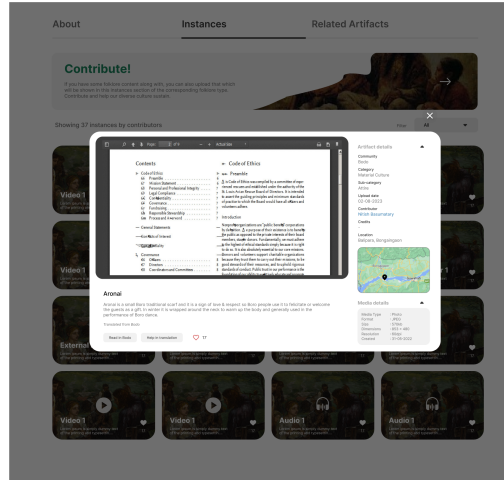


Fig. Contributed content(E-books, Papers)

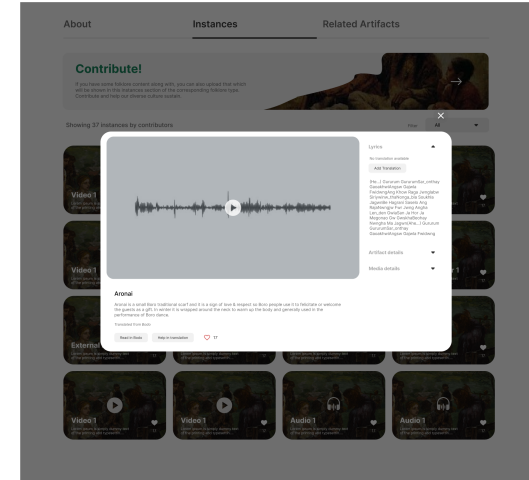


Fig. Contributed content(Type-Audio)

12.7. Discover New Contents

Discover page features, curated contents, articles, specific content that can be directly controlled by the admins to create regular engagements.

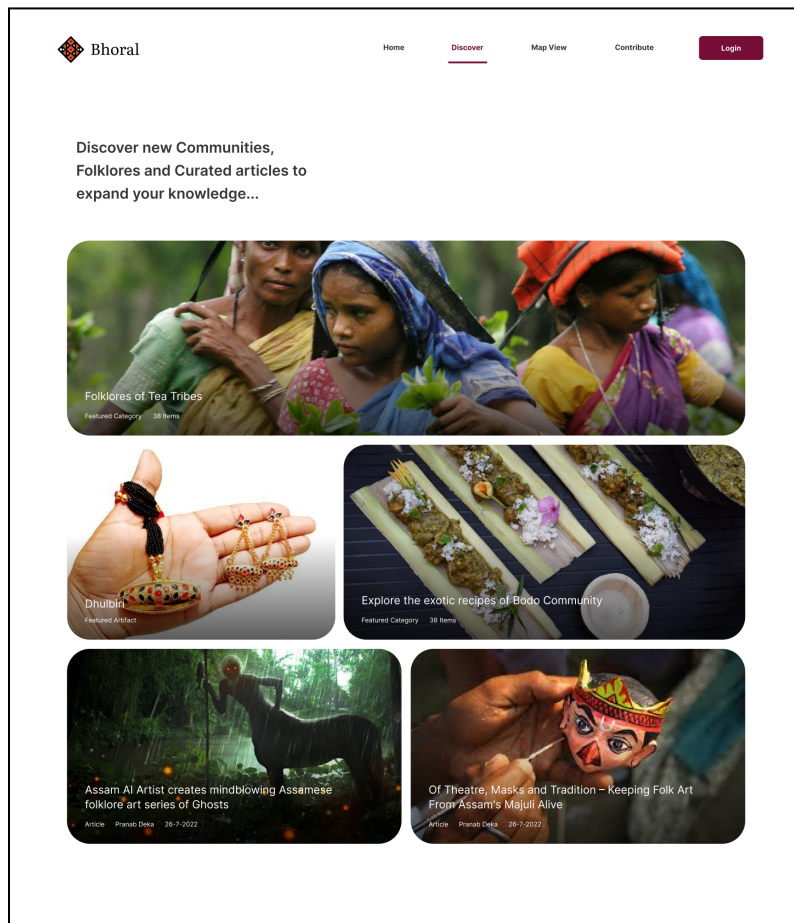


Fig. Discover Page

The sizes of different containers implies types of content, in this example the top container with the longest width represents featured communities, a new community every now and then featured for new users, the uneven two containers are for featured individual artifacts and featured categories, while the equal containers denote article

12.8. Map View

12.8.1. Discover feature

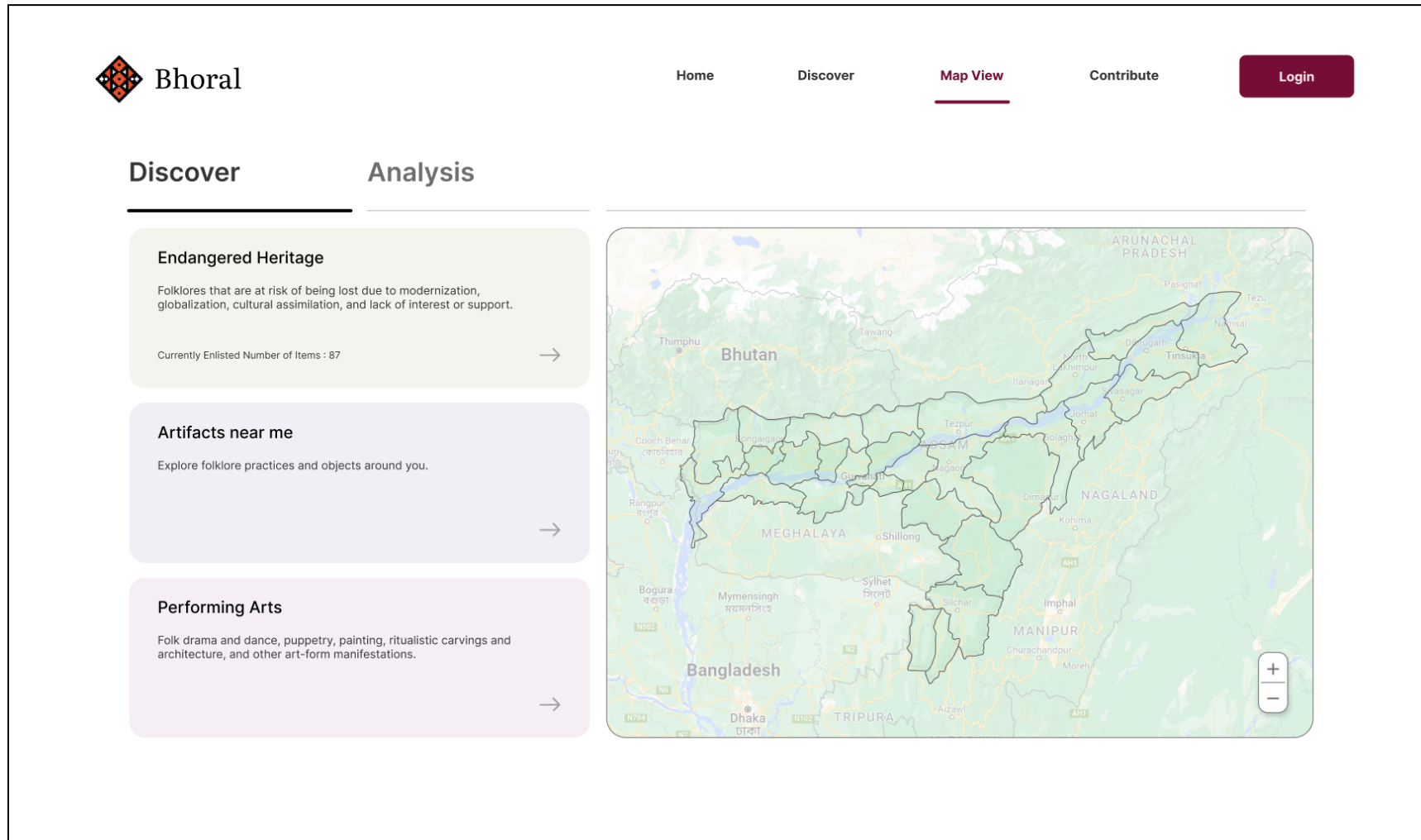
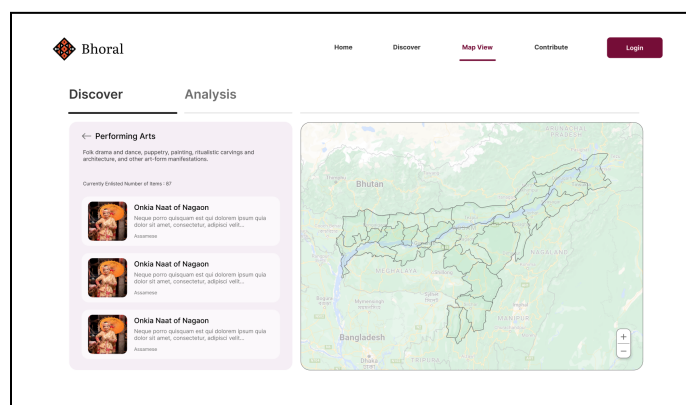
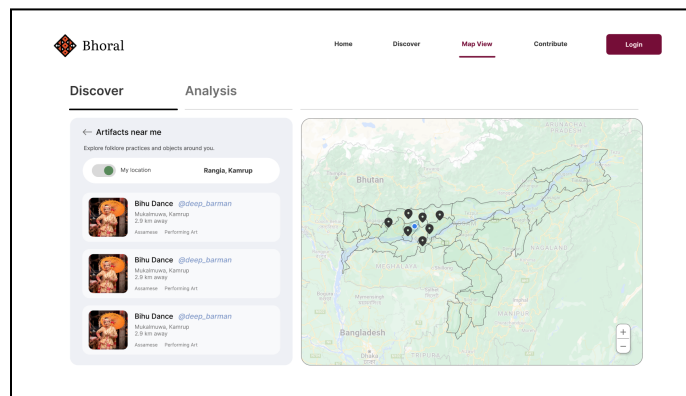
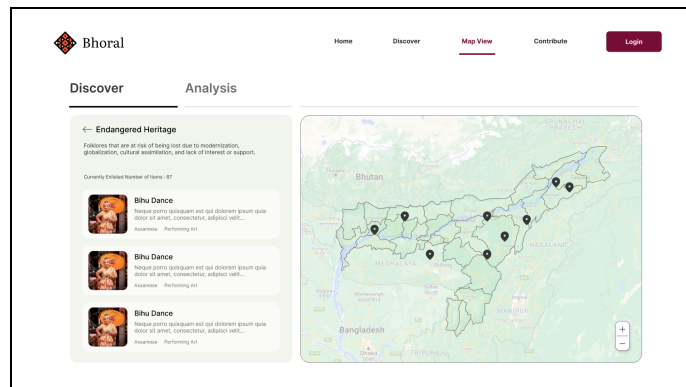


Fig. Map View(Discover section)



As the name suggests, the Discover section of the map let's users explore folklore materials through the help of the map. An user who is native to Assam, has a clear mental model of the state's geographical map, in which case for exploration purposes having a map where artifacts are mapped out properly according to their location will create much value. Three categories of data that are identified to be most important in regard with viewing in map.

1. Endangered Heritage - The folklores that are on the verge of extinction.
2. Artifacts near me - Instances of artifacts that are nearby users location
3. Performing arts - As mentioned earlier assam has a unique tradition of performing arts in rural areas, where almost every old village has their heritage of organizing such performing arts yearly basis.

12.8.2. Analyze feature

The analyze section on the map lets you visualize or compare all the available instances of a particular folklore category of two communities. It's a speculative feature designed assuming the success of this repository in terms of gathering a huge amount of geo-location enabled folklore data.

 Bhoral

[Home](#) [Discover](#) [Map View](#) [Contribute](#) [Login](#)

Discover

Analysis

Folklores that are at risk of being lost due to modernization, globalization, cultural assimilation, and lack of interest or support.

Select folklore type

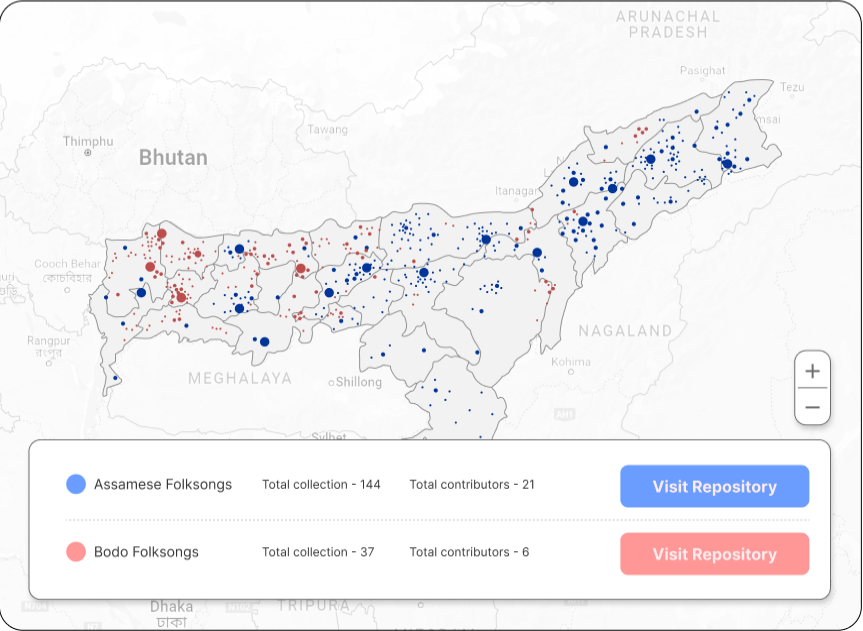
Folksongs

Select community

Assamese

Compare with

Bodo



Assamese Folksongs	Total collection - 144	Total contributors - 21	Visit Repository
Bodo Folksongs	Total collection - 37	Total contributors - 6	Visit Repository

12.9. Contribution

The screenshot shows the 'Contribute' page of the Bhoral website. The header includes the Bhoral logo, navigation links for Home, Discover, Map View, and Contribute (which is highlighted), and a Profile button. The main content area is divided into two columns. The left column features a large heading 'One step towards Archiving our rich folklore heritage...' followed by the question 'How do you want to contribute?'. Below this are five buttons: 'Upload Media', 'Upload external resources', 'Upload Research Papers', 'Publish articles', and 'Help in translation'. The right column displays a user profile for 'Juri Barman', a member since May 2023, with 7 contributions and 35 friends. Below the profile is a 'Notifications' section showing two messages: one about a contribution being approved and another about a connection request from Rupam Barua.

Bhoral

Home Discover Map View **Contribute** Profile

One step towards Archiving our rich folklore heritage...

How do you want to contribute?

Upload Media Upload external resources Upload Research Papers Publish articles Help in translation

Juri Barman
Member since May, 2023

← My Contributions 7

← Friends 35

Notifications

Your contribution to the Beliefs and Customs category is approved!
24-5-2023 [View in repository](#)

Rupam Barua wants to connect to you!
24-5-2023 [View Connection](#)

12.9.1. Contribution of Media files

 **Bhoral**

[Home](#) [Discover](#) [Map View](#) [Contribute](#) [Profile](#)

← **Upload Media**

Upload

Artifact name :

Snails With Lentils

Don't Know the name ? Search through categories

Folklore Category :

Material Folklore

Sub-category :

Food Habits

Community :

Bodo

Title :

Snails Curry

Description :



Media Description :

Media Type : Photo

Format : JPEG

Size : 570kb

Dimensions : 853 × 480

Resolution : 60dpi

Created : 31-05-2022

Location :

Geo-Location not available with the photo

Add Location

 **Juri Barman**
Member since May, 2023

← My Contributions

7

← Friends

35

 **Notifications**

Your contribution to the Beliefs and Customs category is approved!

24-5-2023

View in repository

Rupam Barua wants to connect to you!

24-5-2023

View Connection

59

12.9.2. Contribution of translation

 **Bhoral**

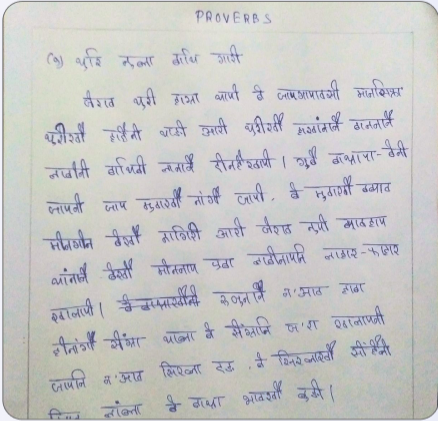
[Home](#) [Discover](#) [Map View](#) [Contribute](#) [Profile](#)

← Help in translation

Translate from :
English

Translate to :
Bodo

Type of content :
Photos that contains text



Start Typing...

[Previous](#) [Next](#)



Juri Barman
Member since May, 2023

[← My Contributions](#) 7

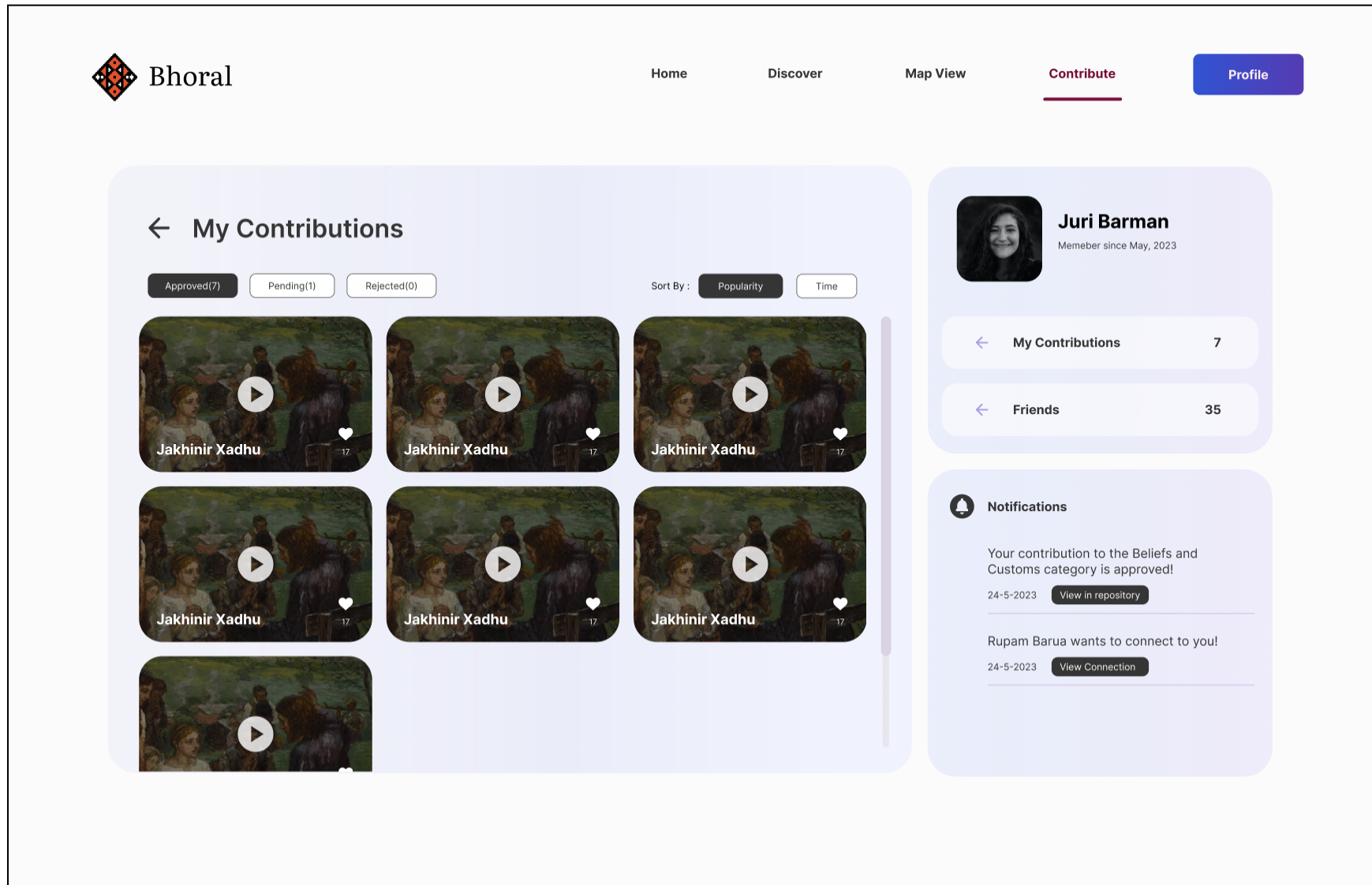
[← Friends](#) 35

 **Notifications**

Your contribution to the Beliefs and Customs category is approved!
24-5-2023 [View in repository](#)

Rupam Barua wants to connect to you!
24-5-2023 [View Connection](#)

12.9.1. My contribution section



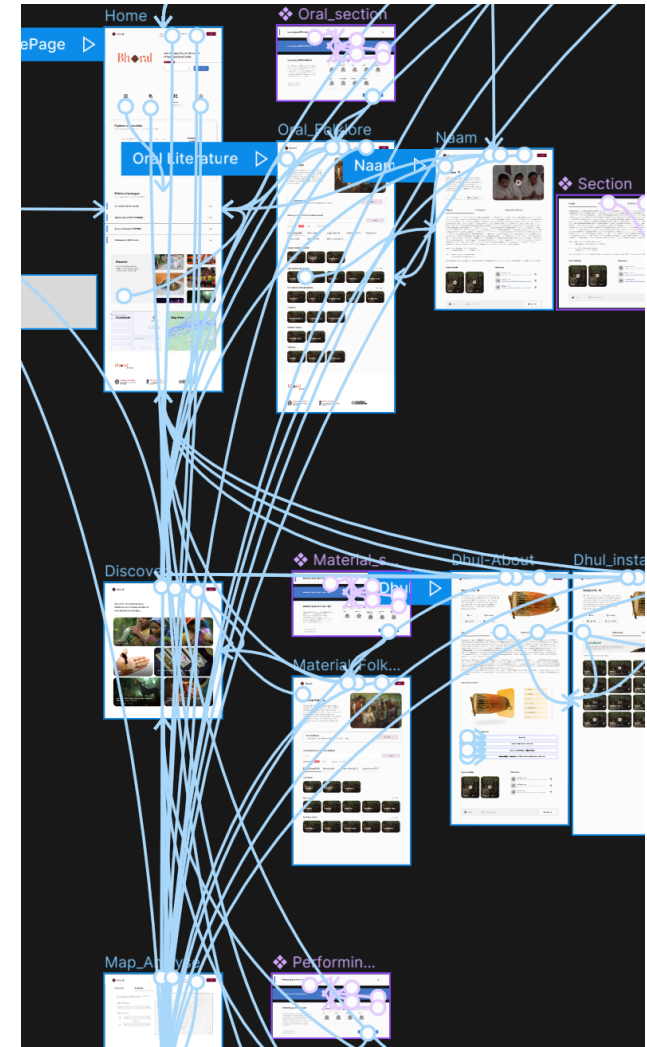
13. Prototype

After designing all the interfaces, a figma clickthrough prototype has been developed covering all the major flows.

Link to the Prototype : [Click Here](#)

Note :

- Please view it in 'Fit to width' mode for optimum screen resolution
- Some flows still need to be added, so to see which components, buttons are interactable, please click anywhere the prototype which will highlight the interactive areas of the prototype.
- Not all the contents are real, so you might encounter placeholder photographs, texts in some places.
- Please ensure a stable internet connectivity, wait of the prototype to load completely.

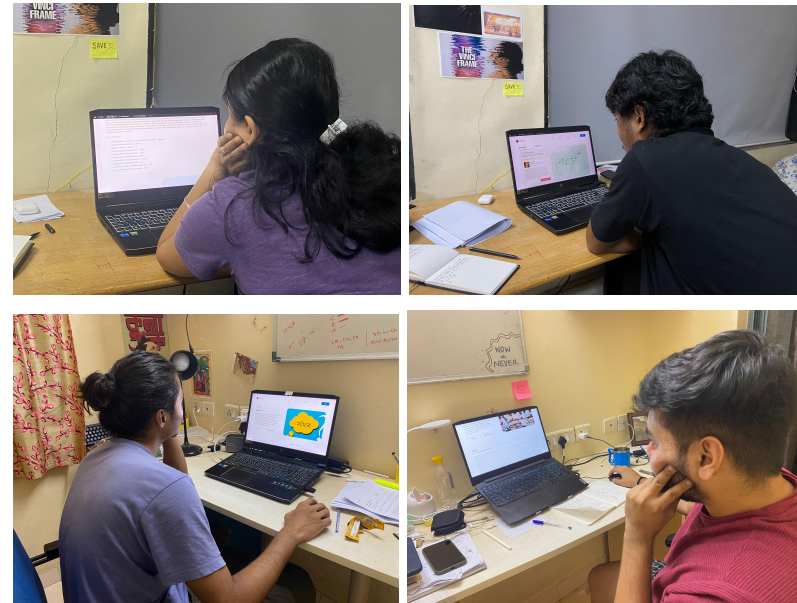


14. Evaluation

The preliminary evaluation for the content collection method(School children) is being done in the earlier part of the project and mentioned in the report.

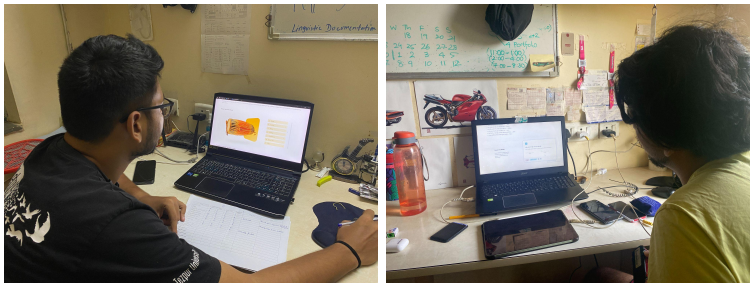
For the final prototype, I conducted evaluation on the grounds of usability, information findability, content hierarchy etc. Which covers the entire prototype and all the interactions of all the features.

I also talked to a subject matter expert for evaluating the correctness of the categorizations of the folklores and relevant topics along with a general feedback.



14.1. Participants

I recruited 9 users of which 7 were people from the state itself with different ethnicities and there were 2 users who are not from Assam.



14.2. Methods

The usability evaluation is a combination of the following methods -

1. Exploration based observation : All the participants were told to explore the website on their own. This is to check the common user flows or intended areas of interest based on the design. The navigation patterns are also identified through this process. Interventions are needed for non-working links and buttons.
2. Tasks given to find information : Few tasks were given to see the intuitiveness of the content and information findability. As the scope of the project was not to represent actual data, so the search functionality and findability of very specific information couldn't be

tested. Some of the tasks were like, finding out the names of parts of a Dhul, uploading a photograph of a folk artifact you possess etc.

3. Think Aloud : Users are also told to think aloud while browsing the prototype. Most of the time this is carried out by the doubts but some very important points have come across through it.
4. Feature wise usability score : After going through the prototype and doing all the given tasks users were told to fill the SUS scorecard and a feature wise usability scorecard as shown below.

	Features	Usability?(is it easy to use)		Value(Usefulness of the feature)	Desirable?(How much fun or engaging?)
		Interactions	Contents		
1	Explore community				
2	Catalog				
3	Category page - sub category sections				
4	Artifact page - About section				
5	Artifact page - Instances section				
6	Artifact page - Related Artifacts				
7	Individual Examples - overall				
8	Individual examples - Detail Section				
9	Individual examples - Translation feature				
10	Riddle quiz				
11	Musical Instrument - Parts				
12	Musical Instrument - sound				
13	Musical Instrument - Related				
14	Performing Arts - Individual Elements				
15	Discover				
16	Map view discover				
17	Map view analysis				
18	Contribute Homepage				
19	Contribute media upload				
20	Contribute translation				

14.3. Results

The overall feedback was predominantly positive, with users finding the solution highly relevant and acknowledging the collective usefulness of the repository. However, there were some usability issues highlighted during the evaluation. The qualitative analysis yielded a mix of positive and negative aspects of the design, which can be categorized as follows,

1. Navigation :

The home page, despite being scrollable, experienced minimal user scrolling initially, with most users relying on the menu section in the header for navigation. The primary reason cited by users was the clear visibility of the menu items, whereas there were no obvious indicators of scrollability, except for a barely noticeable arrow at the bottom. Otherwise all the other navigations were easy and intuitive while browsing the site.

2. Findability of information :

Out of the 9 users, 6 users were able to find all four artifacts with ease. However, 3 people native to Assam faced confusion while searching for "Dhul." The reason for this confusion was that people often associate "Dhul" as an integral part of the Bihu Dance performance, assuming it would be categorized under "Performance Art" instead of "Material Culture."

3. Categorizations of folklore :

The categories used in the repository were not my design choice but were determined by experts after years of research. During testing, some interesting observations emerged. One such finding was the confusion of certain musical artifacts with performance art, as mentioned in the previous point. Another significant concern that arose during categorizations was the fine distinction between Oral folklores and Performing arts. This insight surfaced during the post-interview discussions with a user well-versed in Assam's folk songs. He told “A song is not its lyrics only, it has its true essence only when it is performed, so by that definition folksongs came under performing arts.” This observation holds some truth, underscoring the necessity to engage in dialogues with experts to find a suitable resolution for this classification dilemma.

4. Content :

The feedback from most users indicated that the content in the "About" section was too text-heavy and lacked interactivity. They also emphasized the need for the content to be available in Assamese and other languages of Assam.

Regarding the map section, users expressed a desire to see multiple communities compared together for better understanding. Additionally, they found the content on the map confusing, as it was not clear if it represented user-contributed content or different types of folklore. This information was not intuitively visible at first glance, leading to a need for improved clarity and visual representation.

Also on most of the Categories and folklore types Icons were preferred over textual content.

14.3. Result of the Usability Score Test

The SUS score yielded an impressive 84, indicating that the system is above average in terms of usability and can be deemed as highly usable. Additionally, a feature-wise usability test was conducted to identify any less performing features that require redesign. This comprehensive test evaluated four key parameters: the usability of interaction, the intuitiveness of contents, the usefulness of the features, and the desirability of the features. The total score for each feature was calculated by adding the nine users' individual scores for each parameter. Then it was sorted in order of decreasing to identify the least useful features.

	Features	Usability?(is it easy to use)		Value(Usefulness of the feature)	Desirable?(How much fun or engaging?)	total
		Interactions	Contents			
1	Explore community	31	36	44	34	145
2	Catalog	37	41	44	41	163
3	Category page - sub category sections	30	40	43	31	144
4	Artifact page - About section	38	40	44	36	158
5	Artifact page - Instances section	33	36	40	37	146
6	Artifact page - Related Artifacts	37	37	40	33	147
7	Riddle quiz	33	38	41	43	155
8	Musical Instrument - Parts	43	45	45	45	178
9	Musical Instrument - sound	40	41	41	38	160
10	Musical Instrument - Related	41	42	44	38	165
11	Performing Arts - Individual Elements	40	41	44	36	161
12	Discover	33	34	38	30	135
13	Map view discover	36	36	42	31	145
14	Map view analysis	32	30	38	30	130
15	Contribute Homepage	41	40	42	32	155
16	Contribute media upload	38	39	41	35	153
17	Contribute translation	41	33	44	43	161

Feature wise usability score

Feature	Total Score
Musical Instrument - Parts	178
Musical Instrument - Related	165
Catalog	163
Performing Arts - Individual Elements	161
Contribute translation	161
Musical Instrument - sound	160
Artifact page - About section	158
Riddle quiz	155
Contribute Homepage	155
Contribute media upload	153
Artifact page - Related Artifacts	147
Artifact page - Instances section	146
Explore community	145
Map view discover	145
Category page - sub category sections	144
Discover	135
Map view analysis	130

Top Features

15. Challenges and limitations

1. Scoping down was real hard :

Scoping down the project proved to be a real challenge from the beginning to the final design stage. As advised by my supervisor, the project's vast scope encompassed various design aspects, requiring a well-defined scope and specific objectives to achieve meaningful results. Throughout the project, efforts were made to view it from a system-level perspective. However, due to certain limitations, it culminated in a two-part solution. Despite the realization that this understanding came later in the process, the initial goal of addressing the problem holistically was partially achieved as what the evaluation indicated though a deep dive into the various verticals of various sections of this project is what it demands.

2. Lack of domain knowledge :

The project demanded a greater depth of domain knowledge than initially anticipated. The diverse nature of the domain and its unique characteristics significantly influenced the design decisions. In retrospect, gaining more knowledge about the domain would have been highly advantageous. While I did receive assistance from experts, it proved insufficient to fully comprehend the intricacies of the domain. A more

profound understanding would have undoubtedly enriched the project's outcomes.

3. Absence of real data :

While designing the final prototype usage of real data everywhere would have made it much more realistic for user testing. Or even the collected data from the schools could've been used creatively on the final prototype.

4. Critical aspects :

Creating a repository or archive is not a task for a single individual; it requires dedicated effort over years, even decades. The challenges encountered are due to critical aspects that demand careful consideration for the project to succeed. Factors such as intellectual property rights, conflicting ownership of certain folklores by multiple communities, and the complexities arising from the origin, history, and politics associated with some folklores set boundaries for the project. As a result, various assumptions and acceptances had to be made, influencing certain design decisions in the process.

16. Discussion

The evaluation of this project brought about encouraging outcomes and valuable insights. Users expressed overwhelmingly positive feedback, appreciating how the

repository helps preserve Assamese cultural heritage. The usability scores confirmed that the system is user-friendly and effective in engaging users, especially with features like interactive musical instruments, an engaging "About" section, interactive menus, and the ability for users to contribute translations.

The project initially aimed to crowdsource information, making it possible to present various narratives of folklore in a single accessible place. The successful data collection method tested in this project has the potential to pave the way for a comprehensive solution in democratically acquiring data for archives. Imagine if the government were to implement this in school curricula, providing a system to facilitate data collection, verification, and maintenance. This could create countless opportunities to present folklores in innovative ways while ensuring their preservation for generations to come. The impact and possibilities of such an endeavor are truly remarkable.

The repository aims to capture the true essence of Assam's diverse folklore domain through design interventions like interactive related artifacts, experiential musical instruments, an interactive performing arts section, and visualizing items on maps are incorporated to reflect specific features of folktales found in the region. With more such interventions, we can effectively present the unique characteristics of various other folklores as well. A more critical

17. Future Steps

1. Making the design responsive, specially for the mobile phones, as major traffic nowadays comes through mobile phones
2. Including more realistic information in all the pages
3. Working on creating folklore presentation
4. Extensive usability evaluation of both the mobile and desktop versions with all the changes
5. Pitching the project to the concerned ministry and universities for support.

18. Conclusion

Preserving cultural heritage is becoming increasingly crucial in today's world, and this project aimed to address this need specifically for the state of Assam. This project holds immense personal significance for me, and I am deeply passionate about seeing it come to fruition in the near future. Throughout the journey, I have encountered valuable lessons and challenges that have further fueled my dedication to this cause. Each experience has provided insights that will serve as guiding beacons, steering me to do even better work in the field of cultural heritage preservation. With a heart full of determination and a vision for a culturally enriched future, I look forward to contributing my best efforts towards this noble endeavor. Together, we can safeguard the treasure trove of Assamese cultural heritage for generations to co

References

1. Moradi, Fatemeh, Linnea Öhlund, Hanna Nordin, and Mikael Wiberg. 2020. "Designing a Digital Archive for Indigenous People." *Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping* NordiCHI, no. '20 (October): 1-11.
<https://doi.org/10.1145/3419249.3420174>.
2. Zoom, Jessalyn, and Jeremy Myntti, eds. 2018. *Digital Preservation in Libraries: Preparing for a Sustainable Future*. N.p.: American Library Association.
3. Historical Myths or Mythological History: A Fresh Approach to Understand the History of Assam(Dr Pranab Jyoti Sarma)
4. The Essence of Folktales and Their Functions in Assamese Society90(Kalyani Hazarika
5. Folklife Guest Editor: Parag M Sarma A Quarterly Newsletter from National Folklore Support Centre)
6. Crowdsourcing historical photographs: autonomy and control at the Copenhagen City Archives(Karin Hansson*1,2 & Anna Näslund Dahlgren 1)
7. Participatory Design of Language and Culture Archives (Christina Wasson)
8. (Participatory Design: The Third Space in HCI Michael J. Muller* and Allison Druin)
9. Participatory Design: The Third Space in HCI (Michael J. Muller* and Allison Druin)
10. A Brief History of Digital Preservation(Erin Baucom)
11. Web-archiving and social media: an exploratory analysis90(Eveline Vlassenroot & Sally Chambers & Sven Lieber and 5 more)
12. Designing a Digital Archive for Indigenous People(Fatemeh Moradi, Hanna Nordin, Linnea Öhlund, Mikael Wiberg)
13. PLUGGY: A Pluggable Social Platform for Cultural Heritage Awareness and Participation(Nikos Frangakis , Veranika Lim, Luis Molina Tanco, Peter Smatana, Jan Hreno, Lorenzo Picinali, Luca Simeone and Angelos Amditis)

- End -