Narrative

Project Justification

Goals & Objectives of *Seeking Immortality*: The Northern Cheyenne Preservation Project

Seeking Immortality: The Northern Cheyenne Preservation Project will deepen and expand an existing partnership between the Northern Cheyenne Tribe (NCT) people and San Jose State University (SJSU) to develop a model for using state-of-the-art virtual reality technology to preserve and richly share the NCT language and cultural heritage. NCT and SJSU have already partnered through the IMLS-funded leadership grant entitled Reading Nation Waterfall (RNW), which is focused on increasing access to literacy resources and libraries for tribal children and families. Harnessing the organizational capacity of RNW, *Seeking Immortality* will serve as the proof-of-concept phase of the Tribe's preservation project and will thereby advance IMLS's organizational Goal 3, Objective 3.1 and 3.2, Native American Library Services Enhancement Grant's Goal 3, Objectives 3.2 and 3.3. We seek $150,000.00 in grant funding over two years.

> In support of IMLS Goal 3, Objectives 3.1–3.2 and addressing Native American Library Services Enhancement's Goal 3, Objectives 3.2-3.3, *Seeking Immortality*: The Northern Cheyenne Preservation Project will pilot using state-of-the-art virtual reality technology to preserve and richly share the NCT language and cultural heritage. Once successful, our virtual reality platform will serve as a model for future preservation projects, especially those developing under the IMLS-funded Reading Nation Waterfall.

Need for Immortality: Preserving one community to benefit many

We seek to preserve our language and traditions so current and future generations can learn about and richly experience the NCT language and cultural heritage. There are currently fewer than 300 native NCT language speakers remaining, and most of these individuals are over 65 years old. As of 2017, 38% of all residents of the Northern Cheyenne Reservation were under 18 years old while 7% were age 65 or older (Montana Poverty Report Card)—a worrisome statistic given that it signifies NCT's elder community represents almost half as many people as Montana's other tribes, at 13.5%, and very few elders remain. Additionally, of the currently 12,266 enrolled members in NCT, only about 6,012 reside on the reservation (Cheyenne Nation Website), marking an urgent need to preserve and share the NCT language, the community's past, and our current way of life for future generations, especially for those who have become geographically separated from tribal lands.

The Northern Cheyenne Reservation is in the state of Montana and encompasses 440,000 acres of land, with Lame Deer, Montana serving as the Tribe's headquarters. The tribe is also known as "Tsis tsis'tas" (Tse-TSES-tas), which means "the beautiful people," and it is one of ten bands that comprise the Cheyenne Nation, who reside over the Great Plains from southern Colorado to the Black Hills in South Dakota (Governor's Office of Indian Affairs). The Northern Cheyenne Reservation is approximately 44 miles long and 23 miles wide—located in the rural area of Bighorn and Rosebud counties - and is situated in ranching and coal mining country. Much of the Reservation population lives in the five distinct centers: Ashland, Birney, Busby, Lame Deer, and Muddy Creek. The largest population center is Lame Deer, with approximately 2,900 people. These demographic facts provide a snapshot of the current community our proposed work will serve.

As NCT Tribal Librarian Adrienne Violett describes the need to preserve our cultural artifacts and heritage was never more poignantly clear than during the 2021 wildfires that almost consumed our current tribal archives:

> The wildfires had reached the hill right above our college, and so I grabbed what I could from my office and our library and put these sacred, one-of-a-kind artifacts into what would fit in my car and drove off. That night I could not sleep knowing that so much of the NCT history and cultural artifacts could be lost in the fire. Fortunately, the fire did not advance, and we were saved. We must digitize and archive as much as we can to avoid something like this from ever happening (Adrienne Violett, Library Director, Chief Dull Knife College and NCT librarian).

For this reason, *Seeking Immortality* will document and maintain our tribe's history and native language to allow our youth to grow and engage with our culture in the near and long term (Figure 1). While this project's efforts directly target preserving the language and cultural heritage of the NCT, *Seeking Immortality* will ultimately benefit four broader groups: 1) All past, current, and future enrolled members of the NCT, 2) Other tribes and indigenous people—especially those in RNW—who will be able to replicate our virtual reality archive model, 3) Society in general, who will have access to our tribal language and culture as preserved in 2022, and 4) Other communities of people who wish to preserve their language and culture using this model. This project will also fill two needs valuable to the IMLS mission: *Seeking Immortality* will offer a proof of concept about using virtual reality tools to maintain a cultural heritage, which will model for other communities how to document their own cultures, and our virtual reality platform will help other communities discover our own heritage. Thus, by focusing on one tribe's particular culture and heritage, *Seeking Immortality* will benefit innumerable communities for current and future generations.

Project Work Plan

The project will take two years to complete and will follow an iterative software development lifecycle in two phases. **Phase 1** will include developing the initial version of the *Seeking Immortality* VR Museum and Library, followed by usability testing and formal feedback from the general community; thereafter, **Phase 2** will reflect refinements to the process and lead to a beta and 1.0 version, which will include additional content and artifacts and will inform our replicable model and toolkit. During our two-year project, we will both refine and digitize existing and new content, a process that will entail (1) 'de-noising' existing recordings and cleaning up old photographs to bring out detail and clarity, (2) using optical character recognition (OCR) technology to digitize older, non-digital books and writings, and (3) creating new, "born digital" content, including filming oral stories/speakers/ceremonies/dances, photographing and digitizing important tribal spaces, and putting together a language dictionary in multiple formats. As a pilot study, these activities will be done in small increments so that they may demonstrate what may be shared in a virtual museum and library.
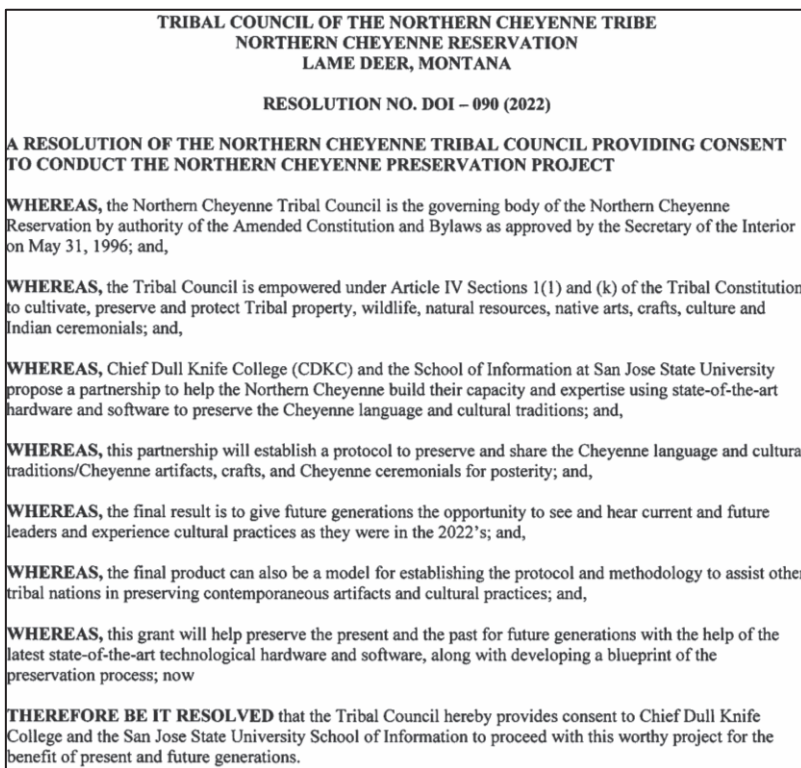

TRIBAL COUNCIL OF THE NORTHERN CHEYENNE TRIBE
NORTHERN CHEYENNE RESERVATION
LAME DEER, MONTANA

RESOLUTION NO. DOI – 090 (2022)

A RESOLUTION OF THE NORTHERN CHEYENNE TRIBAL COUNCIL PROVIDING CONSENT TO CONDUCT THE NORTHERN CHEYENNE PRESERVATION PROJECT

WHEREAS, the Northern Cheyenne Tribal Council is the governing body of the Northern Cheyenne Reservation by authority of the Amended Constitution and Bylaws as approved by the Secretary of the Interior on May 31, 1996; and,

WHEREAS, the Tribal Council is empowered under Article IV Sections 1(1) and (k) of the Tribal Constitution to cultivate, preserve and protect Tribal property, wildlife, natural resources, native arts, crafts, culture and Indian ceremonials; and,

WHEREAS, Chief Dull Knife College (CDKC) and the School of Information at San Jose State University propose a partnership to help the Northern Cheyenne build their capacity and expertise using state-of-the-art hardware and software to preserve the Cheyenne language and cultural traditions; and,

WHEREAS, this partnership will establish a protocol to preserve and share the Cheyenne language and cultural traditions/Cheyenne artifacts, crafts, and Cheyenne ceremonials for posterity; and,

WHEREAS, the final result is to give future generations the opportunity to see and hear current and future leaders and experience cultural practices as they were in the 2022's; and,

WHEREAS, the final product can also be a model for establishing the protocol and methodology to assist other tribal nations in preserving contemporaneous artifacts and cultural practices; and,

WHEREAS, this grant will help preserve the present and the past for future generations with the help of the latest state-of-the-art technological hardware and software, along with developing a blueprint of the preservation process; now

THEREFORE BE IT RESOLVED that the Tribal Council hereby provides consent to Chief Dull Knife College and the San Jose State University School of Information to proceed with this worthy project for the benefit of present and future generations.

Figure 1 - Seeking Immortality Tribal Resolution supporting the proposed effort.

Tasks and Activities

Year 1 and Phase 1 (Sep. 2022 – Aug. 2023).

Task 1: Finalize Administrative Team and Documentation Protocols (Sep. – Oct. 2022). Adrienne Violett, tribal library director, will oversee and administer the grant as co-Director of *Seeking Immortality*; to maximize efficiency and integration with RNW's infrastructure, Director Violett's counterpart will be Dr. Anthony Chow, RNW's project director. The remaining RNW leadership team—including the national advisory committee, project managers, steering committee, web/social media/VR coordinator, and external evaluator (view RNW project team here)—will also help support this grant. Anthony Whitedirt will serve as the technology lead for NCT. During this task, we will round out our administrative team by finalizing our contract with the VR-development company Standard Magic to serve as the primary developer of the virtual reality space; this developer's work will be overseen by *Seeking Immortality*'s VR subject matter expert, Jon Oakes. Also, during this task, Dr. Darra Hofman, international digital archives and preservation expert, will help develop the *Seeking Immortality* archiving protocol to support the digitization and

preservation process as digital records are migrated into virtual reality. By leveraging RNW's team, *Seeking Immortality* will be able to accelerate this administrative step to jumpstart this project.

Task 2: Finalize Project Logic Model and Evaluation Crosswalk (Sep. – Oct. 2022).
To ensure close alignment between the project proposal, project timeline, and evaluation methodology, the *Seeking Immortality* team will build a project logic model and project evaluation crosswalk. This logic model will align our project goals, inputs, outputs, and outcomes. The project evaluation crosswalk will align all evaluation methodologies with project goals and objectives. Both the logic model and evaluation crosswalk will be used to oversee the project via a built-in formative and summative evaluation process to confirm project completion and success.

Task 3: Finalize Project Implementation Design (Sep. – Oct. 2022).
The project timeline will be finalized, and offsite team members' site visits will be scheduled. These site visits from our offsite partners will help the whole team visualize and conceptualize the project as we co-design how we are going to preserve and archive our language, cultural ceremonies, and traditions.

Task 4: Host Site Visit 1 to Finalize Digitization and Preservation Plan (Nov. 2022).
Offsite partners will join NCT for a three-day site visit on the NCT reservation and at Chief Dull Knife College in Lame Deer, MT. Goals for this site visit will be to introduce and educate the SJSU team to the NCT culture and history, establish preliminary guidelines, assess current infrastructure and technology, and work with NCT to establish a preliminary list of items to digitize and preserve. Dr. Chow will work with Director Violett, tribal leadership, and the SJSU team to finalize the list of what will be refined, recorded, and preserved as part of the pilot version of the VR space. The design, testing, community input, and development schedule and process will also be discussed and finalized. Priority will be given to recordings and artifacts that currently exist, followed by digitizing new language recordings in audio, video, and full-motion capture, and then digitizing select artifacts, performances, ceremonies, and oral stories.

Under the coordination of NCT, Dr. Hofman will focus on two primary subtasks: ***Subtask 4.1: Assess the collection and select those items that are most appropriate for initial digitization*** (or migration, for born-digital items). Known as the "archivist appraisal," this step "is the process of determining whether records and other materials have permanent (archival) value" (Society of American Archivists, "appraisal"). In other words, during this subtask, the team will determine which objects have enough value to the NCT - based on such factors as institutional mandate, uniqueness, the authenticity of the object, the data quality, costs of preservation, and so forth. The process will especially consider *arrangement and description*, which means the provision of intellectual and physical control over the collection through arranging and describing the materials using accepted standards, such as Encoded Archival Description (EAD) or Describing Archives: A Content Standard (DACS). Proper arrangement and description places objects in their context, captures their provenance, establishes their reliability, and ensures their ongoing authenticity. While the team will certainly be capable, as librarians, of learning to do this work, this arrangement and description process necessitates a different orientation to the material than a

Figure 2 - Full-Motion capture of a dance. Such documentation will preserve our cultural heritage in a way others will be able to engage with through our virtual reality platform.

traditional library catalogue, and the team will require training and orientation in archival arrangement and description. Dr. Hofman will accordingly prepare a processing manual with templates for the team to use on their own for future processing of materials. ***Subtask 4.2: Create metadata for objects***. The other initial task will be creating metadata for the objects to be preserved. Rich metadata is critical to ensuring the long-term availability, accessibility, and trustworthiness of digital objects, and must be designed to meet the needs of the designated community for whom the objects are being preserved. The National Information Standards Organization explains, "good metadata conforms to community standards in a way that is appropriate to the materials in the collection, users of the collection, and current and potential future uses
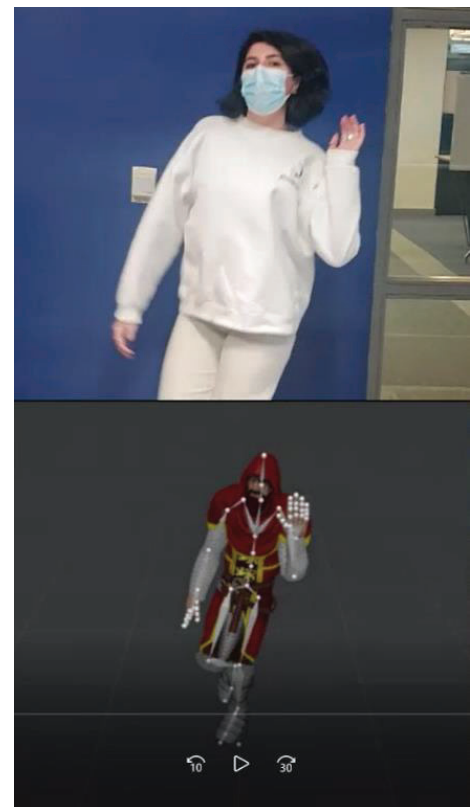
of the collection" (2007, p. 61). However, most existing metadata schema reflect settler-colonial values and ways of knowing, and metadata that reflect indigenous ways of knowing are still in development (Fernel, 2021; Duarte & Belarde-Lewis, 2015; Duarte et al., 2020); as an example, not all the knowledge being preserved in this project should be available to all people under Northern Cheyenne protocols, and these restrictions will need to be reflected in the archive's metadata and access restrictions.

During this site visit, Jon Oakes will also focus on two additional primary subtasks. *Subtask 4.3: Set up and field test the* **Seeking Immortality** *technology kit*. Prior to working with existing and recording new NCT archival materials, the hardware, software, and server archival and backup process will need to be field tested. This process involves preliminary tests of the various activities that will be implemented during Site Visit 2 to ensure the SJSU team is ready to implement its archival activities when they begin their work with items in the NCT archives. *Subtask 4.4: Capture sample datasets of all media types and document the process*. To field test the technology and proposed methodology, examples of the types of recordings and digital preservation will be conducted and piloted to identify gaps and need for refinement before actual implementation begins. This process will include test recordings of NCT native speakers, full-motion capture of select ceremonies, and 360 scans of select artifacts.

Task 5: Design and Build the Virtual Reality (VR) Language and Cultural Heritage Museum and Library (Oct. 2022 – Aug. 2024). The design and development of the VR space will begin in October and continue for the rest of the project (View demo space here). The VR consulting firm Standard Magic has agreed to serve as the primary developer of *Seeking Immortality*. Our VR platform will host two significant types of cultural preservation materials, including audio/video records of native language speakers and 2D/3D digitized artifacts. Figures 2 and 4 represent examples of the virtual documentation the website will host; Figure 3 represents the quality of VR environments that will be created. We will use Mozilla Hubs to host our platform since Mozilla Hubs is browser-based and can be accessed via standard web addresses or hyperlinks in a standard web browser, thereby greatly increasing the platform's usability for a typical visitor. Based on the final digitization and preservation plan (Task 4), our project manager will order any additional hardware and software needed to prepare for Site Visit 2, which is when significant onsite digitization and preservation will occur.

Figure 3 - A ballroom "scene" created by Standard Magic

Subtask 5.1: Build prototype VR scenes. The VR team, led by Jon Oakes, will start building out simple scenes using Mozilla Hubs VR Software; at this time, the team will also explore connections with more involved apps that are interactive and/or learning tools (e.g., Smartphones, VR googles, Microsoft Mesh, etc.). The focus will be on 1) establishing an interactive journey and an interactive 'tour' of our culture, and 2) developing 'chatbot' apps that can carry on conversations within the scope of what the bot knows and has been prescribed to share (especially via the metadata). *Subtask 5.2: Develop proof-of-concept models for tribal leadership and the NCT to test and select.* The NCT leadership and community will be active participants throughout the design, development, and iterative testing and prototyping lifecycle, approving all artwork, scenes, and actions/items shared in the VR space. This activity will include reviewing entire "scenes" for accuracy, cultural appropriateness, and overall interaction and experience.

Task 6: Host Site Visit 2 (January 2023). Based on the finalized design and development schedule and the preliminary guidelines and list established initially during Site Visit 1, the SJSU team will return for two-weeks to formally begin refining, digitizing, and preserving select aspects of the NCT language and cultural heritage. Dr. Hofman will work closely with Director Violett and the NCT tribe to begin the preservation process for the list of items agreed upon. This process will include recording language and cultural traditions—such as dances, songs, oral storytelling, etc. To keep the scope of this activity reasonable for this proof-of-concept project, only a small set of content will be identified for

documentation. Our subtasks will include ***Subtask 6.1: Digitally enhance current assets and digitized records.*** The SJSU team will review and analyze our current digital archives and seek to *(1)* 'de-noise' existing recordings and increase the clarity of old photographs to bring out detail and focus, and (2) use optical character recognition (OCR) technology to digitize older non-digital books and writings. ***Subtask 6.2: Record native language speakers in the VR platform using both video/audio and motion-capture technology***. As illustrated in Figure 1, we will create life-like avatars that "speak" the language both verbally and non-verbally in 360-degree fidelity. These avatars will enable our VR museum visitors to engage with the speaker in meaningful ways. ***Subtask 6.3: Digitize culturally relevant and historic spaces and artifacts.*** These spaces and artifacts of cultural significance will be digitized, categorized, and preserved digitally to support sharing them through our open access VR museum and library. Figure 4 shows the type of preservation we anticipate performing for physical artifacts.

Task 7: Archive and Preserve Select Cultural Heritage Traditions and Artifacts (February 2023 – Ongoing).
Once the preliminary recording, documentation, and digitization process is complete for the proof-of-concept artifacts, the items will be cataloged and archived, and digital representations will be developed in the VR museum and library. The on-site team members will continue adding materials to the digital archive and will follow the project logic model and timeline. Via telecommuting technology, the full project team, along with the evaluator, will meet quarterly to ensure formative evaluation is applied and in place. This evaluation process will include qualitative interviews of team members as well as documentation of project inputs and outputs - e.g., the number of language recordings and/or number of artifacts posted in the VR museum and library. Any needed adaptations to the project plan or methods will be discussed during these meetings to confirm the archival and preservation tasks will be completed on time and within budget.

Figure 4 - This 3-D rendering of a basket showcases the opportunity of this tool to capture community artifacts in our virtual platform.

Task 8: Perform User Testing and Gather Community Input (Mar. – Jun. 2024).
It is essential that all aspects of the process are approved by the NCT. The project team will seek formal feedback from NCT community members, a process that will include usability/user experience (UX) testing as well as testing across multiple devices and platforms. This task will involve user interviews, focus groups, and a community survey to collect tribal member feedback on the VR museum and library. Given his area of expertise, Dr. Chow will coordinate the user testing and overall UX testing for the VR space. The Technology Acceptance Model (TAM) posits that technology is adopted only when it is high in relevance and easy-to-use. The goal of *Seeking Immortality* is that the VR museum and library will be high in both areas and therefore will be more likely used and visited. Such priority will require significant testing, so this task will iteratively occur throughout the latter half of the first year.

Task 9: Refine VR Museum and Library Based on Community and Tribal Leadership Input (Jun. – Aug. 2023).
Based on the formal feedback from the broader NCT community and the additional recordings and digitization from Site Visit 3, additional refinements to the *Seeking Immortality* VR Museum and Library space will be made, as needed. We will follow all procedures detailed above to confirm a functional, usable platform.

Task 10: Build Draft Model of Digitization and Preservation Process (Jun. 2023 – Ongoing).
The entire *Seeking Immortality* team will document the steps in the process, the technology, and the curation/digitization procedures. We will collaboratively iterate on the form of these documentations and then share them in multiple spaces, including on the website and within the VR space. These instructions will provide resources to others interested in implementing this archival process within their own communities.

Task 11: Present and Disseminate Findings (Ongoing).
The findings of the project will be presented at academic conferences and published in peer reviewed venues to ensure there is scholarly dialogue around the process and the creation of a VR museum and library. While we anticipate this task will occur intermittently throughout both Phase 1 and Phase 2 of the project, we will initiate the public conversation about our activities early in the platform-development process to cultivate interest and to, potentially, gain insights from others interested in our project. Furthermore, the VR space by design is an asynchronous space that will be visited by people when it is most convenient for them. An interactive game/survey will be made available to gather visitor feedback.

Task 12: Perform Annual Evaluation and Progress Report (Jul. – Aug. 2023). The project will be evaluated for strengths and opportunities for improvement. The annual report to IMLS will be prepared, and the project will be refined, as needed, based on the evaluation results.

Year 2 and Phase 2 (Sep. 2023 – Aug. 2024).

Following the best practices of an iterative software development lifecycle, we will save the entire second year for platform improvements. These Phase-2 tasks include:

Task 13: Refine VR Platform Based on UX Feedback (Sep. 2023 – Aug. 2024). The project team will refine the VR platform based on evaluation results and from lessons learned during Year 1. Such evidence will support the beta testing and ultimate launch of the 1.0 version of the NCT VR Museum and Library. Following the principles of rapid prototyping and iterative design - based in ongoing testing and feedback - we will make continuous refinements to the library, the process, and the documentation and developing model and toolkit.

Task 16: Host Site Visit 3 (Oct. 2023). Site Visit 3 will be for three days and will involve making any additional recordings or digitization needed for this proof-of-concept project. The SJSU team will also use this site visit to gather further feedback from all stakeholders, and they will conduct technology and VR-maintenance training for on-site staff. Accordingly, this task will include ***Subtask 16.1: Establish a training process in digital preservation and curation*** and ***Subtask 16.2: Provide ongoing short- and long-term support during the project.*** While there is a perception that digital objects are somehow permanent and immaterial, the truth is that digital objects are fragile, subject to risks - including technological obsolescence, compromise of the data's safety/security, data loss and the inability to prove an object's trustworthiness, and loss of accessibility/understandability of the object due to insufficient contextual information (e.g., metadata) (Digital Preservation Coalition, n.d., https://www.dpconline.org/digipres/implement-digipres/dpeg-home/dpeg-risks). Mitigating these risks requires that digital objects be preserved and curated, processes that require a mix of library, archival, technological, and other skills. Furthermore, sustainable digital preservation and curation requires appropriate infrastructure, including technology, policies, and procedures. Dr. Hofman will prepare a training course on digital preservation and curation for the on-site team to orient them to digital preservation and curation, provide them with the foundational knowledge and skills to do the work, and provide references and further learning to support them in continuing the work in the future. The digital preservation and curation communities are very open-source oriented and, providing foundational training, will enable the NCT on-site team to continue learning and self-support.

Task 17: Conduct Formal Usability Testing for Platform's Public Launch (Mar. – Jun. 2024). Whereas the previous usability testing was for cultivating the platform, this testing process will involve five natural observations, five usability tests (where users complete specific high-priority tasks), and a user survey about the overall relevance and ease-of-use of VR museum and library. This formal usability testing will be conducted by Dr. Chow and will allow for additional - and preferably new - community input about the overall usability and user experience of the VR space.

Task 18: Final Site Visit 4 (May 2024). Site Visit 4 will be for three days and will involve making any additional recordings or digitization needed for this proof-of-concept project. The SJSU team will also use this site visit to gather further feedback from all stakeholders, and they will conduct technology and VR-maintenance training for on-site staff.

Task 20: Finalize Model of Digitization and Preservation Process and Toolkit (Jun. 2024 – Aug. 2024). Based on the results of our usability testing as well as what was learned during implantation of the pilot project, the *Seeking Immortality* process will be codified into a final, replicable model and toolkit that will include all technical specifications and the step-by-step process of the protocol developed and applied.

Task 23: Apply for Additional Funding for Broader Preservation Project (September 2024). We will submit an IMLS National Leadership Implementation grant proposal to both continue the preservation of our language and culture and to begin training other tribal and indigenous communities in how to replicate our work.

Risks & Mitigation

The primary risk involved in our activities will be in handling important cultural artifacts. To mitigate this risk, standard preservation and archiving procedures will be followed by a Dr. Hofman, who is a professional archivist.

Team

The following subject matter experts will be part of the project team:

Adrienne Violett (Co-Director of *Seeking Immortality*) is the library director at Chief Dull Knife College and will lead the digitization and archival process on behalf of the tribe. Violett will additionally oversee the archival process and will interface between the tribe and the SJSU researchers.

Dr. Anthony Chow (Co-Director of *Seeking Immortality*) is the founder and project director of the RNW project, a full professor, and the director of San Jose State University's School of Information. His expertise includes Native American and indigenous culture and librarianship, usability and UX, technology integration, and the design of digital spaces. He will serve as the primary interface between *Seeking Immortality* and RNW, and he will lead usability and UX testing.

Dr. Darra Hofman is the program coordinator for SJSU's Master of Archives and Records Administration (MARA) program and is an expert in archives and records management, with a special focus on the intersection of archives and technology. She will oversee the archival process.

Jon Oakes is the Technology Labs Coordinator at SJSU's Martin Luther King, Jr. Library and a leading expert in VR and emerging technologies. He will lead the digitization and VR development process.

Anthony Whitedirt is the Digital Technologist and a Historical Researcher at Chief Dull Knife College, and will serve as the technical lead for the NCT on this project. He will work with Director Violett, serve as a cultural and historical advisor, provide technology coordination and support, and be trained on all hardware, software, and digital preservation protocols.

Dr. Kathryn Grogan is an evaluator and senior research scientist at WestEd. Dr. Grogan who will lead the project's evaluation.

Management Plan

Under the existing Reading Nation Waterfall IMLS project's leadership structure, the *Seeking Immortality* project will be led by Co-Directors Dr. Chow from SJSU and Library Director Adrienne Violett. Dr. Chow will also serve as lead researcher, project director, and lead for collecting community feedback and usability testing. Director Violett will serve as Co-Project Director and will lead and coordinate the project on behalf of the NCT and oversee the digitization and archival capacity building on behalf of the tribe. Violett will additionally over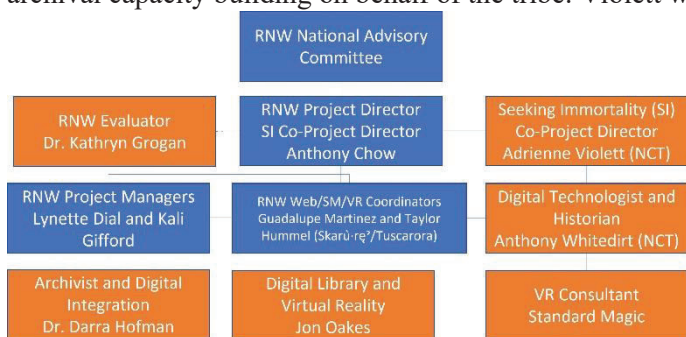see the archival process and also be the connection between the tribe and SJSU researchers. RNW's two project managers will help oversee the day-to-day activities of *Seeking Immortality*. *Seeking Immortality* will also have a dedicated web development/social media/VR student assistant, who will ensure a strong public presence and will also support the VR design and development, as needed. Dr. Hofman will oversee the developmental of the archival protocols, Jon Oakes will be charge of the digitization and VR design and development, and Anthony Whitedirt will oversee NCT technology. The VR consultant (likely Standard Magic, see Task 1) will oversee the VR platform's primary development. Dr. Grogan will serve as the evaluator.

Figure 5: Organizational chart showing Seeking Immortality's relationship with Reading Nation Waterfall (RNW). Seeking Immortality (SI) will leverage the infrastructure of RNW to maximize IMLS's return on investments for this project.

Resources

The project will follow a standard design and development lifecycle, which will take a full two years. Primary costs will be offsite team members' travel and accommodations to the NCT reservation, time for senior personnel to carry out the duties of the project, and the hardware and software investments needed to capture and digitize the artifacts.

Dissemination Plan

The project will have a dedicated SJSU student position to oversee its web and social media presence, and the VR library will be designed for public access when the platform is finished. Other dissemination activities will be traditional scholarly venues, including ATALM, ALA, state conferences, and journal publications. Most importantly, as this project will design and formalize a methodology for digitizing and preserving language and cultural heritage and traditions in VR—especially those of the NCT—this project will deliver a toolkit with relevant procedures and practices for initiating similar VR archives elsewhere. To extend the reach and valuate of this toolkit, we will share it with the five RNW partner tribes as well as with the broader LIS community via our website, social media, and VR museum and library.

Intended Results

The goal of the project will be to digitally record, preserve, and share select aspects of the NCT language and culture in a virtual reality museum and library. This project will serve as a pilot project and a "proof of concept" that a VR space is usable and provides an appropriate digital representation of the NCT language and culture. The project, as outlined in the Northern Cheyenne's Tribal Council Resolution (Figure 1), has one goal: *To preserve the NCT's language and culture*, with two objectives: 1) To "help the Northern Cheyenne build their capacity and expertise using state-of-the-art hardware and software to preserve the Cheyenne language and cultural traditions" and 2) To "establish a protocol to preserve and share the Cheyenne language and cultural traditions/Cheyenne artifacts, crafts, and Cheyenne ceremonials for posterity" (NCT Resolution, March 25, 2022).

Seeking Immortality will have three outcomes: 1) To "give future generations the opportunity to see and hear current and future leaders and experience cultural practices as they were in the 2022s," 2) To serve as "a model for establishing the protocol and methodology to assist other tribal nations in preserving contemporaneous artifacts and cultural practices," and 3) To "help preserve the current and the past for the future with the help of the latest state-of-the-art technological hardware and software along with developing a blueprint of the preservation process." Additional project outcomes will include 3) Training of the NCT library and archives staff, and 4) A toolkit that can be used to replicate the process used for this project. We anticipate the success of this project will enable our community to apply for a bigger grant to continue the digital preservation process.

Ultimately, and most importantly, this project will result in the digital recording and preservation of some of our language and culture.

Lasting Impact

Through the efforts of this proof-of-concept project, the NCT people will gain a blueprint for the technologies and processes needed to preserve the NCT language and culture. Coupling such a blueprint with the VR environment we will build will enable us to increase our peoples' access to our culture while also building valuable bridges with the outside world. Thus, this project will provide NCT with an enhanced capacity to be self-sustaining in preserving its cultural traditions and history, and this effort will allow us to provide the outside world with open and free access to our heritage.

Seeking Immortality | Northern Cheyenne Tribe and San Jose State University Research Foundation

Schedule of Completion

Task	Year 1 Activity	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23
1	Finalize Administrative Team and Documentation Protocols	�	�										�
2	Finalize Project Logic Model and Evaluation Crosswalk	�	�										�
3	Finalize Project Implementation Design	�											
4	Host Site Visit 1 to Finalize Digitization and Preservation Plan			�									
5	Design and Build the Virtual Reality (VR) Language and Cultural Heritage Museum and Library		�	�	�	�	▢	▢	▢	▢	▢	▢	▢
6	Host Site Visit 2 (two weeks)					▢							
7	Archive and Preserve Select Cultural Heritage Traditions and Artifacts						▢	▢	▢	▢	▢	▢	▢
8	Perform User Testing and Gather Community Input							▢	▢	▢	▢		
9	Refine VR Museum and Library Based on Community and Tribal Leadership Input										▢	▢	
10	Develop Model of Digitization and Preservation Process												
11	Present and Disseminate Findings						▢	▢	▢	▢	▢	▢	▢
12	Perform Annual Evaluation and Progress Report											▢	▢

Task	Year 2 Activity	Sep. 2023	Oct. 2023	Nov. 2023	Dec. 2023	Jan. 2024	Feb. 2024	Mar. 2024	Apr. 2024	May. 2024	Jun. 2024	Jul. 2024	Aug. 2024
13	Refine project based on annual evaluation results	▓	▓										▓
14	Continue with Digitization and Preservation	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
15	Continue with Development and Maintenance of Virtual Reality (VR) Language and Cultural Heritage Museum and Library	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
16	Site Visit 3 (One Week)		▓										
17	User Testing and Community Input							▓	▓	▓	▓		
18	Site Visit 4 (One Week)										▓		
19	Refine VR Museum and Library Based on Community and Tribal Leadership Input										▓	▓	▓
20	Finalize Model of Digitization and Preservation Process and Toolkit										▓	▓	▓
21	Present and Disseminate Findings						▓	▓	▓				▓
22	Perform Annual Evaluation and Final Progress Report											▓	▓
23	Prepare IMLS National Leadership Grant							▓	▓	▓	▓	▓	▓

Digital Products Plan

Type

What digital products will you create?

Seeking immortality will generate the following digital content: still images, audio files, moving images, object inventories, object catalogs, artworks, books, posters, curricula, field books, maps, notebooks, metadata schema, charts, tables, drawings, workflows, teacher resources, and software, including source code, algorithms, applications, and digital tools, plus accompanying documentation.

All content will be in their native format, saved in Google Drive, saved on NCT's server, and, when applicable, linked in our Mozilla Hubs VR Museum and Library.

Availability

How will you make your digital products openly available (as appropriate)?

The project will build the capacity and develop a process of digital archiving and preservation for the tribe. This will include developing and expanding on our existing archives which is available to the tribe and public but also will include potential inclusion in the Seeking Immortality VR space, which will also be publicly available.

Access:

What rights will you assert over your digital products, and what limitations, if any, will you place on their use? Will your products implicate privacy concerns or cultural sensitivities, and if so, how will you address them?

The tribe will retain copyright on all NCT artifacts and recordings but will honor IMLS' request for "a royalty-free, nonexclusive, and irrevocable right to reproduce, publish, or otherwise use the work and authorize others to reproduce, publish, or otherwise use the work" and make available all applicable content in its VR museum and library under a Creative Commons license.

Sustainability:

How will you address the sustainability of your digital products?

All our digital archives will implement at least two, if not three levels of redundancy – local server at the library, network server run by the community college, and finally cloud based storage. All content, as applicable and approved by the tribe, that is available for public access will be made so both at the Wooden Legs Library and through our VR space.