The Aboriginal and Torres Strait Islander Data Archive: Connecting communities and research data

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1. Introduction[1]

The Aboriginal and Torres Strait Islander Data Archive (ATSIDA) is a specialist section of the Australian Data Archive (ADA) that manages the collection and storage of Australian Indigenous research data. It is important to collect and preserve the data being produced by researchers in this field to make it available for secondary access and use, both as a means of reducing the burden on over-researched Indigenous communities, and enabling informed analysis in areas of national priority. Although there are now efforts to make research data available to the communities who participated in the research and for reuse by other researchers, historically this has not been the case. Much material has tended to remain in researchers' offices, sometimes becoming unusable due to format obsolescence or loss. Research and documentation of Aboriginal and Torres Strait Islander languages is a significant area of attention, and the data created during this research should be managed in order to secure its long term preservation.

The digital domain offers opportunities for research data to be curated and managed for sustainability and diversity of content. Datasets deposited with ATSIDA are managed through appropriate protocols[2] that respect the rights of Indigenous people and the management of their knowledge. One of the overarching goals of ATSIDA, and the focus of this paper, is the commitment to connect Indigenous Australian communities with research data. We will discuss:

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[1] The authors would like to acknowledge the ATSIDA Reference Group for their contribution to the Protocols and ATSIDA staff Cornelia Cronje and Ryan Stoker for contribution to ATSIDA projects.

[2] The ATSIDA Protocols are available at atsida.edu.au/protocols [accessed 2013-08-11]

- the development of ATSIDA, including background on its vision, partners and key stakeholders
- the importance of archives working closely with researchers, their data and the communities to which the data relates – see Section 2
- the protocols that have been developed to guide preservation and ongoing sustainable use of Indigenous Australian research datasets – see Section 3

2. Introducing ATSIDA

2.1 Operational context – structure and relationships

ATSIDA is an ambitious project that has relied heavily on building strong relationships across many institutions to ensure preservation and appropriate management of research data. In this section we will briefly discuss the key institutions that ATSIDA is connected with and outline some of the relationships that have been established to provide guidance and support to ensure the success of the project.

2.1.2 The University of Technology Sydney Library

In 2008, the University of Technology Sydney (UTS) Library was invited by the Australian Data Archive to establish a trusted national repository for Indigenous research data which would work proactively with researchers and communities to identify, manage and preserve often-dispersed digital research datasets. The invitation was made as a result of research on the development of Indigenous protocols in the library and information resource field by Dr Alex Byrne and Professor Martin Nakata, both of whom held positions at UTS at the time (Byrne et al 2005; Nakata 2006; Nakata et al 2008a; Nakata et al 2008b). Much of this research related to increasing awareness of Indigenous peoples' aspirations to be actively involved in the management of their cultural heritage materials held in libraries and archives.

The ATSIDA project is situated in the eScholarship unit of the UTS Library and draws on the expertise of the UTS Jumbunna Indigenous House of Learning. Positioning the archive in an academic library provides opportunities to connect with researchers in the early stages of their projects and to provide advice about and support for research data management. It has also provided opportunities for collaboration on University ethics

policies and procedures, and best practices for working with Indigenous research.

The staff engaged in developing ATSIDA have professional experience and expertise in the library and archive field, as well as an understanding of Indigenous research and knowledge management. The Project Officer, Kirsten Thorpe, is an Aboriginal woman descended from the Worimi people of Port Stephens, NSW.

2.1.2 The Australian Data Archive

ATSIDA was established as a thematic archive of the Australian Data Archive (ADA) with its datasets stored securely at the National Computational Infrastructure (NCI) at the Australian National University (ANU). The ADA (formerly known as the Australian Social Science Data Archive, and also with links to the Paradisec archive[3]), has been managing social science research data in Australia since 1981. The other partner universities are the University of Melbourne, the University of Western Australia, and the University of Queensland. The ADA team includes professional data archivists who provide data stewardship and outreach services to the Australian community (ADA 2013).

ADA's strengths have historically been in managing large poll datasets and other quantitative research material. More recently ADA broadened the scope and focus of their collection development, establishing thematic archives or 'nodes' within a consortium of Australian universities. This expansion came as the archive acknowledged the vast range and extent of digital data being created by researchers that requires active curation, management and preservation. The ADA currently comprises seven thematic archives, including ATSIDA (ADA-Indigenous), that focus on Social Science, Historical, Indigenous, Longitudinal, Qualitative, Crime and Justice and International specialty areas (ADA 2013). These thematic archives provide researchers with secure and appropriate places to deposit and share their research data. Students and researchers can browse or search the archives to discover and reuse deposited research data to build their own projects.

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[3] See www.paradisec.org.au [accessed 2013-08-12]

2.1.3 ATSIDA Reference Group

A significant source of advice and guidance for ATSIDA is a Reference Group comprised of internationally recognised experts in Australian Indigenous research. Representatives come from the library, archive, museum, government and higher education sectors and provide a valuable mix of perspectives and experience. The Group also includes representation from the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS).

The Reference Group is required to:

- advise on the development and promotion of ATSIDA
- assist in building relationships with Indigenous communities, researchers and curatorial institutions
- determine criteria for the selection and prioritisation of datasets to be included in ATSIDA
- provide advice on datasets or issues that present difficulties under accepted protocols (ATSIDA (a) 2013)

As a national project, ATSIDA has relied on advice from the Reference Group to connect to relevant State and Territory research or community activities. This has been an effective way for ATSIDA to keep abreast of new research projects that are being established in higher education institutions across the country.

2.1.4 Other significant stakeholders

It is important for ATSIDA to develop and maintain links with a range of national cultural heritage institutions to collaborate on projects of shared interest. To this end, ATSIDA has developed a Memorandum of Understanding with AIATSIS whose collections are the largest and most notable resources relating to Australian Indigenous peoples.[4]

The team consults on a case-by-case basis with other archives and libraries to link collections and to ensure that any physical materials are stored as close to their source community as possible. For example, Len

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[4] For more information on AIATSIS and the significance of their collections see www.aiatsis.gov.au [accessed 2013-08-01]

Smith and Gordon Briscoe's work on the Annual Aboriginal Census has been digitised and stored with ATSIDA while the physical collection is held by ANU archives. The building of these relationships has been a key factor in the development of ATSIDA. The key stakeholders and shared areas of activity are as follows:

- Aboriginal and Torres Strait Islander communities – managing appropriate documentation, access and return of digital data and materials
- researchers – developing data management plans and contextual information relating to their research
- Higher Education Institutions – identifying nationally significant datasets and research projects and assisting with development of strategies to ensure preservation and access to data
- government – influencing policies relating to research data, Indigenous research material, intellectual property and moral rights
- international organisations – collaborating with international Indigenous policy developers and researchers.

This collaboration and emphasis on relationship building has been an overarching driver and vision for the ATSIDA team. From time to time, lack of understanding of the emerging open access research data environment has created suspicion and confusion on how the project fits into the wider sphere of archives, libraries and Indigenous collections. It was for this reason that the team created a set of Frequently Asked Questions titled 'A Hitchcock Guide to ATSIDA' (ATSIDA (b) 2013).

2.2 Data curation and digital preservation

Developing ATSIDA has required proactive engagement with the research and Aboriginal and Torres Strait Islander communities. Outreach with the latter is discussed in more detail in Section 3.1. First, we will discuss the importance of working with researchers to ensure the longevity of digital research data.

Much has been written in the library field concerning the importance of research data management and the challenges of what has been called the 'data deluge' (Hey and Trefethen 2003; Borgman 2012). Similarly, there has been a growth in research and professional discourse on the importance of data curation for long-term preservation and reuse (Witt 2009; Lee and Tibbo 2007). Beagrie (2008) discusses the significant effort required to develop

infrastructure to support ongoing management of digital materials, and the need for researchers and information professionals to build digital curation skills and tools.

ATSIDA assists researchers to build strong data management capacity and to consider issues that may arise in managing their project data. Without active curation there is the risk that research data becomes unreliable and untrustworthy. For example, ATSIDA assists researchers in developing metadata that helps to contextualise their work and to manage the rights and interests of participants involved. Such management often needs to be applied at a highly granular level, e.g., one part of an audio interview, or a single image held in a collection of thousands of other recordings or photos (such as in the Wirangu Language Project which documents an endangered language from the far west coast of South Australia).[5]

The team also connects researchers with data archivists at ATSIDA and the ADA to streamline the deposit of data and to plan for data migration to minimise the risk of data loss. Figure 1 outlines the stages in the research lifecycle.

Figure 1:   Working with Researchers – Research Data Management Planning
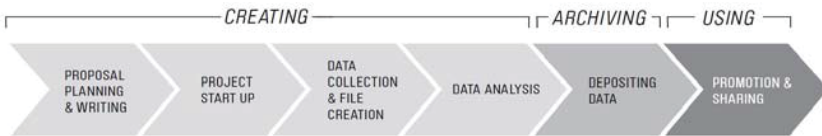
At the proposal and planning stage, ATSIDA collaborates with researchers by reviewing existing datasets and ethics approval, identifying any potential challenges for data, and factoring in costs associated with data collection and management.

During the data collection and file creation stage, researchers may need assistance securing appropriate informed consent, establishing anonymisation techniques, and determining appropriate file formats for archiving and preservation. ATSIDA also works with researchers to determine the suitability of data for long term preservation and setting appropriate access conditions.

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[5] atsida.edu.au/archive/datasets/wlp [accessed 2013-08-01]

Although the focus of ATSIDA is on born-digital research materials, it has also digitised analogue material because of its value to both indigenous and research communities. The team provides advice on best practices for digital conversion and documentation wherever necessary, e.g., Heather Goodall's interviews with Aboriginal community members for her PhD research *Invasion to Embassy* were originally recorded on audio cassette tapes that were digitised into high quality open format digital files.

2.3 Mandates and imperatives for preserving data

While the deposit of research data in Australia is likely to be mandated in the near future, it is not currently required as it is in some other international contexts.[6] The Australian Code for the Responsible Conduct of Research[7] requires the proper management and preservation of research data funded by the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC). Other nationally-funded projects such as the Australian National Data Service[8] (ANDS) and Research Data Australia[9] have contributed to raising awareness about data management and preservation.

Despite this, there is much work to be done to increase awareness of actively managing research data. In addition, critical information technology infrastructure needs to be developed to build trusted archives to manage our 'resilient digital cultural heritage' (McKemmish and Wilson 2012). Individual institutions are at an embryonic stage in developing appropriate infrastructure and tools to manage their needs.

3. The ATSIDA protocols

The ATSIDA protocols for preservation, access, reuse and repatriation of research data relating to Aboriginal and Torres Strait Islander communities were established to guide best-practice management of Indigenous research data. In this section we discuss the protocols and briefly explore the historical background and importance of connecting Indigenous people and

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[6] See for example, the UKDA information on requirements for deposit of data from relevant funding agencies at data-archive.ac.uk/deposit/why [accessed 2013-08-01]

[7] www.nhmrc.gov.au/_files_nhmrc/publications/attachments/r39.pdf [accessed 2013-08-01]

[8] www.ands.org.au/ [accessed 2013-08-01]

[9] researchdata.ands.org.au/ [accessed 2013-08-01]

communities with research data. We also look at the impact of Indigenous research methodologies on the management of research data and the various rights statements that give support to communities to remain connected and in control of their cultural heritage that is documented in research data.

3.1 Connecting communities with research data

Historically, Indigenous communities have been dislocated from archived materials relating to their heritage and history (Fourmile 1989). Government employees, anthropologists, linguists, ethnographers, surveyors, and missionaries created a wealth of information relating to Aboriginal and Torres Strait Islander people and their cultures (Nakata and Langton 2005: 13). Research data often remained in researchers' offices and was not made available for future access or use. Indigenous people and communities, who were the subjects or informants in the research, generally remained unaware of where research materials were housed, or what the outcomes of the research had been.

The network of libraries, archives and museums around Australia and institutions such as AIATSIS hold significant research material[10] that relates to Australian Indigenous communities, including language documentation; however this material is dispersed and often difficult to identify. While there has been work carried out to address these issues, through community consultation and funded projects such as indexing of materials and creating exhibitions, much of this has focused on existing analogue collections and not those created in digital format.

For the past two decades, memory institutions such as libraries, archives and museums have been actively addressing the rights of Indigenous knowledge holders to determine access to cultural heritage material obtained by researchers. In recent times, the provision of digital access to heritage materials has been in the spotlight. That attention is bolstered by the UNESCO 2003 Convention for the Safeguarding of Intangible Cultural Heritage, which defines intangible cultural heritage as:

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[10] AIATSIS Audiovisual Archive has approximately one million items (audio, photographs, video and artefacts) and one of the most comprehensive collections of print materials on Australian Indigenous studies in the world (manuscripts, language materials, books, records of organisations, newspapers, maps, posters, kits, ephemera, microforms and CD-ROMs) See www.aiatsis.gov.au/collections/collections.html [accessed 2013-08-01]

the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artifacts and cultural spaces associated therewith – that communities, groups and in some cases, individuals recognise as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

In the Australian social science research context, datasets can include genealogies, stories, songs, oral histories, ritual, and other expressions of Aboriginal and Torres Strait Islander knowledge. Such material constitutes cultural capital, the major resource within a local economy of knowledge. In many communities it has been orally transmitted in accordance with cultural protocols, but it sometimes needs to be reclaimed from historical records. Language documentation is an important source of knowledge for communities who are actively seeking to revitalise their languages (Hobson 2010).

Mindful of this, ATSIDA seeks to ensure the return of knowledge documented in research projects to the relevant indigenous communities. Researchers are requested to identify materials from their full datasets to be returned to a relevant community keeping place. It may be that all of the material is appropriate for return, and will be made available as open access. Alternatively, only a small portion of material may be returned due to privacy, confidentiality or cultural reasons. This is determined jointly by the researcher and community members.

An example is ATSIDA's work with the Yirrkala community; since 2009 ATSIDA has been facilitating dialogue between the Buku-Larrŋgay Mulka Centre at Yirrkala, Arnhem Land, and the University of Sydney Macleay Museum. Together we are working through the cultural protocols and parameters for making a collection of early Yolngu bark paintings available as a shared research dataset. Created by Yolngu artists at Yirrkala in the mid-1940s, the paintings were collected by anthropologists Ronald and Catherine Berndt. They document important cultural knowledge that is of continued importance to the community today.

In order to make the bark paintings more accessible to the Yolngu community and others, the team created digital images of them and other contextual records relating to the collection. These include summaries of Ronald Berndt's mid-1940s field notes recording information from the artists, and 1975 audio recordings and transcriptions of interviews with Yolngu Elder

Wandjuk Marika which explain their meaning and cultural associations. This project is assisting to re-establish connections between the community and its cultural materials and to document their continued and changing significance through time.

The ATSIDA protocols advocate for research data to be curated in a way that considers its return to communities at the completion of the research project. The model encourages a situation where data never moves far from the community or participants to which it relates – it is always connected through relationships or more formal agreements between the parties involved. This is an approach that is proactive rather than reactive, where 'digital repatriation' (Gibson 2009: 9; Christen 2011) is understood as a conversation about data and records. Compared to a paper-based world, the time needed in a digital environment to acquire and document material for deposit is much less and there are opportunities to make data more accessible, if it is well managed. Building the return of data into the planning of the research project provides the opportunity for active participation of communities in the overall decisions about the deposit, access and use of data.

ATSIDA encourages digital repatriation and return of data via a recognised cultural centre or community organisation (such as a language or knowledge centre), while the full dataset is preserved by the ADA. One of the challenges of this approach is the lack of infrastructure and support available at community level to manage digital cultural heritage material in sustainable ways (see also Wilbur's contribution to this volume). The ATSIDA team is very conscious not to place unnecessary burdens on communities to manage material without support. Wherever possible, advice, referral and support for communities about library and archival solutions for their local collections are provided. However, much more work is required in this area.[11] Wherever possible, ATSIDA also aims to collaborate with partners on shared interests and increasing benefits for the community. For these reasons, ATSIDA has been working with the Mukurtu[12] project, testing their content management system for its applicability to the return of material to communities. This will enable communities to manage their own digital data access, reuse and sharing on the Internet.

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[11] For a more in-depth look at this issue see Ormond-Parker and Sloggett (2012)

[12] www.mukurtu.org/ [accessed 2013-08-01]

3.2 Indigenous research methodologies and research data

There has been a major shift in Indigenous research agendas and in the adoption of Indigenous research methodologies for engagement with Aboriginal and Torres Strait Islander communities. This shift has encouraged more vigorous discussion about the benefits of research for communities, including having access to the results of research such as publications and data. Martin Nakata, ATSIDA Reference Group Chair, discusses the benefits of communities being engaged with research data:

> Enabling researchers to expedite research and development periods in projects is an important means to value-add to the work of Aboriginal and Torres Strait Islander communities. Enabling access by Aboriginal and Torres Strait Islander people to their research materials is a key step towards driving evidence-based agendas from the community. ATSIDA in these ways can potentially provide for agendas to progressively improve opportunities as well as futures for Aboriginal and Torres Strait Islander people across Australia. (ATSIDA (c) 2013)

A number of Indigenous academics have been advancing Indigenous research methodologies over the past decade with calls for action and engagement (Rigney 2001; Martin 2003; Nakata 2007). All have concerns about how to ensure Indigenous participation in research design and practice. Indigenous researchers wish to develop ethical practices that ensure that research is conducted transparently with Indigenous people and communities and according to their interests, for their benefit, in ways that do no harm and that do not ignore their cultural and intellectual property rights in the knowledge shared with researchers.

The ATSIDA team refers researchers to the AIATSIS *Guidelines for Ethical Research in Australian Indigenous Studies* (AIATSIS 2010) as a practical resource for considering benefits for communities. ATSIDA builds relationships with researchers from the planning stages of research to help researchers ask and answer questions such as:

- do the participants want the data preserved?
- does any data need to be attributed to traditional knowledge holders?
- what are the access and use conditions for data deposited?
- how do I manage requests for re-use?
- do I need to make the data anonymous?
- can I publish the material online?

- if material is closed to public access, how long for?
- do I need to dispose of any research data? If so, have I deleted it adequately without leaving a digital footprint?

Building such questions into the planning and ethics process enables projects to more transparently obtain genuinely informed consent for the various issues. It clarifies what research participants want to do with their material in the long term, and avoids the risk of having an unmanaged or undocumented dataset.

One of the challenges of this approach is that participants may provide multiple responses about deposit, access and use. This is a challenge both administratively, and for the archival systems. ATSIDA has always aimed to be responsive to these requests, while at the same time promoting a model of open access to data. We document requests for closed or mediated access when the data is deposited with the ADA.

4. Building sustainable and diverse archives

How does an archive like ATSIDA contribute to building sustainable archives that represent diversity? The following section discusses some of the challenges and opportunities that have been identified in establishing ATSIDA.

The challenges

4.1.1 Changing the culture of research data management

The ATSIDA team has engaged a broad range of stakeholders in discussions about changing the culture of research data management. Sometimes these conversations have been challenging, especially as researchers grapple with how their research might be used by others. Researchers cite issues such as a lack of personal relationship with the communities that were part of the original study. Deposit of data in an archive is rarely a priority for researchers, and data management is an administrative burden. There is much work to be done to change the culture of research data management.

Archives need to invest time in building relationships with researchers rather than waiting passively for collections to be deposited (see also Linn's contribution to this volume). Archivists also need to be active in making connections in the various sectors involved with research with Indigenous people and communities. This in itself is a very different approach from traditional archival practice.

4.1.2 Understanding the recordkeeping practices of academic disciplines

ATSIDA engages with a range of scholarly disciplines, each with unique recordkeeping and data collection practices. This has meant that ATSIDA staff need to understand the ways in which researchers create and manage data in a variety of settings, and with a variety of standards, tools and systems.

When data is archived with ATSIDA it is imperative that the archivists working on its curation maintain the integrity of the data and accurately describe and process it. Traditional archival practice has had a much stronger focus on understanding the creation and management of business records and the administrative practices that create records. Much more research and investigation needs to be undertaken by archives and libraries to understand the recordkeeping practices of specific academic disciplines. For example, what is the minimum metadata required to contextualise the fieldnote book of an anthropologist or linguist? What is required of various genres of academic data to ensure that they will be able to be rigorously tested or used in the future? Language documenters have discussed this within their own domain,[13] however traditional archive, recordkeeping and library professional training often lacks this kind of reflection.

4.1.3 Lack of collaboration between librarians, archivists and researchers

There is a lack of collaboration between librarians, archivists and researchers on long term preservation of research data. In the Australian context there have been moves by the ANDS and RDA to define standard metadata for research projects, but there is a lack of investment in broad infrastructure to ensure long term preservation and accessibility. Systems for managing digital research data need to be based on the requirements of the communities who have an interest in it. The systems also need to be flexible and responsive to changing requirements. Archivists and librarians need to be critically engaged, and be open to changing their practices, to ensure that they can respond to the challenges of the digital domain.

Additional resources, both in terms of professional staff and funding, are needed to research and build infrastructure for sustainable and diverse archives. Resources are also needed for the training of researchers and

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[13] See, for example, the Open Language Archives Community   www.language-archives.org/ [accessed 2013-08-01]

information professionals in managing digital data. Without this investment, we risk losing valuable collections. This is of particular importance for the survival of language material crucial for language revitalisation in Aboriginal and Torres Strait Islander communities.

4.1.4 Keeping communities connected with data

An additional challenge is to build long term relationships between communities and their data *after* it is deposited in the archive. This relationship should not be limited to just discovery and access, but should include the right to respond to, update, query or comment on data held in the archive (see also Garrett's contribution to this volume). The Mukurtu content management system shows promise in this area. The challenges include determining how archives are resourced to meet requests and how well systems are designed to support the relevant interactions.

Opportunities

4.2.1 Keeping resources and data connected

Sustainable archives that represent diversity – including the diversity of Aboriginal and Torres Strait Islander people in Australia – require collaboration and engagement among all the stakeholders involved. Relationships need to extend beyond the period of the research project to ensure that material is managed appropriately in the long term. Opportunities will come from engagement that is proactive, not reactive.

The digital domain provides opportunities for archive and library collections to be connected with each other as well as with communities. Reciprocal relationships can be established between Indigenous communities, collecting institutions and researchers to establish and maintain such links. With commitment and focus, researchers and archivists can contribute to building rich and multi-layered collections. If the datasets and links are guided by appropriate ethics processes, they can be successfully managed through informed consent, respecting the rights and interests of the people involved.

4.2.2 Empowering communities through archives

The ATSIDA protocols provide a vision for archiving based on principles of trust, respect and diversity. There is real potential for communities to be empowered by becoming and remaining connected to data that record their

own knowledge, history and traditions. Staff working in community keeping places or knowledge centres, such as at Yirrkala, can connect with the major institutions that hold material relating to them. However, a model that pushes out collections from institutions, rather than burden communities with the task of having to locate relevant collections, would be of enormous benefit. This has become much more possible in the digital domain. By keeping data connected at a local level, communities can participate in decision-making about long term data management. It also allows a community to respond to changes in management of cultural knowledge in their local community context, e.g., by opening and closing access to records as appropriate, or by adding by additional contemporary context to data held in archives (see also Linn's contribution to this volume).

5. Conclusion

The experiences of developing ATSIDA provide valuable lessons about building an Indigenous research data archive. The team have approached the project with enthusiasm and a commitment to addressing challenges. They have been committed to educating researchers and communities about the importance of the broader process of digital data management, rather than having a narrow focus on just 'getting the data'. Questions for future research include:

- what models work best for collaboration between researchers, archivists, and librarians to ensure optimal data management practices?
- how can the unconnected data 'silos' held by individual researchers be addressed to ensure that communities obtain sustainable benefit from such research data?

While budget limitations for higher education and cultural institutions present considerable challenges to projects such as ATSIDA, the potential benefits are enormous for all stakeholders and to society as a whole. The digital domain offers opportunities for archives to be constructed in sustainable ways that ensure that communities keep connected to their cultural heritage materials. The work of ATSIDA demonstrates that archive programs can be based on effective protocols that embrace principles of trust, respect and engagement with Indigenous communities.[14]

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[14] At the time of the initial submission of this paper, both authors held positions in UTSeScholarship and were part of the ATSIDA Project. At the time of resubmission,

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