

Data Sharing Agreements: The Foundation for a Research Partnership

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https://github.com/Sitka-Sound-Science-Center/Data_Sharing_Agreements/tree/main

Land Acknowledgment

The Sitka Sound Science Center is located on and operates on Lingít Aaní – Lingít land. The Lingít people have been Indigenous to these lands and waters for over 10,000 years. Gunalchéesh to the Lingít people for their stewardship of Lingít Aaní since time immemorial and today.

Abstract

Collaboratively and explicitly designed Data Sharing Agreements (DSAs) are the foundation of ethical, respectful, and long-lasting partnerships. This document aims to share the importance of DSAs and design a template for DSAs in the form of a Memorandum of Understanding (MOU). We analyzed the MOUs of Alaska-based project partners alongside a non-comprehensive literature review of publications addressing the creation of DSAs (particularly MOUs) and Alaska-specific papers focused on upholding Indigenous Data Sovereignty in the region. Project partner MOU details are not divulged to ensure data protection, however, ten MOUs were reviewed, including agreements between local and regional Tribal Governments, state and federal agencies, and nonprofit organizations. We utilized this information to construct an MOU skeleton template for use at the Sitka Sound Science Center alongside a streamlined set of protocols that can be followed to design productive DSAs with project partners.

Nontechnical Summary

Data Sharing Agreements (DSAs) are a powerful tool to employ at the inception of a partnership or multi-entity project. The Memorandum of Understanding (MOU) is a type of DSA that is not legally binding but creates a foundation to conduct meaningful work during a project timeline and beyond. Designing an MOU with project partners allows involved parties to reflect on the partnership deeply, define concrete expectations, and develop a communicative relationship. MOUs also prove helpful long into the future of projects and after the projects' completion because they remind people of where data will be stored, how credit will be given in publications, and who owns data during the project timeline and beyond. Proper data usage can be ensured by collaboratively developing detailed, explicit, and robust MOUs. A list of questions has been defined to create a comprehensive MOU. A template MOU designed based on ten of our partner organizations' most impactful contracts has also been developed and offers a starting point for others looking for MOU inspiration.

1. Background

To gain a holistic understanding of any topic, interdisciplinary teams comprised of individuals with diverse expertise, ways of knowing, and backgrounds are required. Not only are multi-entity partnerships advantageous for scientific breakthroughs and addressing complex research questions, but large granting agencies often require multi-entity partnerships to apply for funding. One recent funding opportunity advertised by the National Science Foundation (NSF) announced that “multidisciplinary teams of domestic and international collaborators with expertise from diverse disciplines are likely to be most effective (in applying to this proposal)” (NSF 23-616, n.d.).

With technological advancements and digital communication, teams can be formed across multiple organizations and even across the world.

While collaborative efforts between organizations can be highly productive, they can also present varied challenges. Barriers to effective work and communication include time zone differences, language barriers, or even disparate approaches to working in different specialisms. Unfortunately, challenges can also be created by poor communication of expectations, commitments, or desired outputs across various agencies. These barriers have the potential to not only negatively impact project implementation and success, but can also negatively impact collaborative relationships and reputations. In the wake of the open data movement, where more data is being shared than ever before, it is also paramount to establish clear expectations about data ownership, storage, and dissemination with partners. Fortunately, communication barriers and data management needs can be addressed by employing thoughtful and collaborative Data Sharing Agreements (DSAs) with partnering entities.

DSAs, in any format, offer a foundation for partnership while protecting all engaged organizations. DSAs can be specific to data collection, storage, sharing, and archiving, and are most effectively developed at the inception of research or other activities. Types of DSAs include Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA). These documents are useful from the beginning of a project to beyond project completion. These different agreements can be defined as described below.

Memorandum of Agreement (MOA): A document written between two or more parties to cooperatively work together on an agreed-upon project or meet an agreed-upon objective. The MOA can encompass commitments including party roles, commitments, and data sharing. The MOA can be a **binding legal document** and holds the parties responsible for their commitment (Memoranda of Understanding/Agreement (MOU/MOA), n.d.).

Memorandum of Understanding (MOU): An agreement between two or more parties/institutions. MOUs are typically used for simple common-cause agreements that are **not legally binding** but document each collaborator's expectations or intentions (Memoranda of Understanding/Agreement (MOU/MOA), n.d.).

Data Sharing Agreement (DSA): "An agreement between two or more parties that outlines which data will be shared and, most importantly, how the data can be used. A data sharing agreement can prevent data misuse, data abuse, and unregulated data dissemination. The typical items found in a data sharing agreement are the period of time the data is to be available, the intended use, confidentiality and security information, usage constraints, details on confidentiality requirements, and financial costs" (*Data Sharing Agreement*, n.d.).

A DSA references data and results generated collaboratively or independently from a defined project (University of Alaska Southeast). An MOA or MOU might also relate to functional aspects and objectives of a collaboration, such as defined roles and overall expectations, as well as specific project outputs. Therefore, MOUs and MOAs provide arguably greater scope for outlining and shaping collaborative relationships, with additional explicit description of how resultant data will be shared and used. While an MOA might provide greater protection by being legally binding, many organizations employ MOUs. An MOU represents a written outline of terms and expectations that aims to remove or minimize the

impacts of challenges that can arise during a project timeline. In Alaska, this may be a particular priority for Tribal agencies and other groups who have been historically exploited, either through a lack of credit for their work or knowledge, exclusion from outputs, or extractive research practices that fail to provide data back to communities. Extractive research practices have negatively impacted many Indigenous groups globally (Kennedy et al., 2022), and although agreements with an MOU can be breached or dissolved, the document itself provides a documented history of agreed-upon terms.

Indigenous Data: Information, in any format, that is about Indigenous Peoples, knowledge systems, customs, resources, or territories, or that impacts Indigenous lives at the collective and/or individual level (Rainie et al. 2019; Lovett et al. 2019). This includes data about Indigenous Peoples' non-human relations, including land, water, geology, titles, air, soil, sacred ecosystems, territories, plants, animals, etc. (Global Indigenous Data Alliance, n.d.).

Indigenous Data Sovereignty (IDS): The right of Indigenous Peoples to own, control, access, and possess data that derive from them, and which pertain to their members, knowledge systems, customs, resources, or territories (Kukutai, T., & Taylor, J., 2016).

The Sitka Sound Science Center has a stated mission to increase awareness and understanding of aquatic, marine, and terrestrial ecosystems of coastal Alaska through education and research. It also has stated values in integrity, respect, and community, which include building and maintaining respectful and mutually beneficial relationships with Indigenous groups in Alaska. To deliver on this mission and values, we have developed a framework for creating MOUs that include provisions for DSAs for use in future collaborative efforts. For the creation of a blank 'pro forma' that might be modified for different collaborative project needs, we reviewed existing and previous MOUs and MOAs from project partners, including agencies, Tribal governments, universities, and non-profit organizations in the Alaska region, and explored the components of these documents. In addition to this SSSC-specific MOU template, we explore scenarios in which an MOU might be beneficial, and present a framework from which a tailored MOU might be built.

2. Developing an MOU framework

2.1 Relationship building & aligning mission values

The first step when developing DSAs is building equitable and respectful relationships. Relationship building is critical because it is the foundation of collaboration (Yua et al., 2022). This initial step allows potential partners to get to know each other and establish trust. This phase is also when collaborators can take action to identify and begin to address inherent power dynamics and varying capacities before defining a DSA. For example, when working with Tribal partners, the project timeline and in return the DSA must align with the timelines and capacity of the Tribe while upholding Indigenous Data Sovereignty (Turner et al, 2024). Relationship building takes time because it requires all involved parties to listen, learn, and understand each other's perspectives (Figus et al., 2022).

Equitable partnerships begin by acknowledging the diverse perspectives of project partners and, in the case of Tribal Partners, that Indigenous Peoples and their representative institutions have equal rights and capabilities as state and federal governments. Researchers must understand the history of ethical abuses experienced by many communities to avoid engaging in such extractive research practices and understand mistrust of Western science and academic research by some groups (Saunkeah et al., 2021). Ultimately, multi-entity collaboration and research are simply human interactions and communication that coalesce to make discoveries. It is important to explicitly address this because collaboration is often more complex than meets the eye. But once a strong foundational relationship has been established, individuals can identify where entity missions, visions, and values align (terms defined below). If entities align on missions, visions, and values, and have a foundational relationship, then it is likely that a formal partnership is advantageous, and therefore, a DSA should be created.

Mission: A practical and concrete statement that identifies an organization's goals and how these goals will be achieved (*Guide to Mission, Vision, and Values Statements*, n.d.).

Vision: A statement that focuses on what an organization aspires to become. This statement is less concrete than a mission statement, creating an image of what the organization will look like when development and growth are complete (*Guide to Mission, Vision, and Values Statements*, n.d.).

Values: The ethical guidelines and principles that build mission and vision statements (*Guide to Mission, Vision, and Values Statements*, n.d.).

2.2 Discussion of content

Once a working relationship has been established and all parties have expressed an interest in collaborating as part of a project, parties must engage in honest and thorough discussions of their goals, timelines, as well as expectations of roles, outputs, and sharing of information. Development of an MOU ahead of project inception may form an important stimulus for this discussion, given that the MOU provides a structure for defining the terms of a collaboration. Given that an MOU is most effective when in place at the beginning of a collaborative effort, it has the added benefit of ensuring these discussions occur early. The specifics of these discussions will vary depending on the project and collaborating partners; however, as part of this work, we have detailed common thematic elements across previous SSSC MOU documents and how these might be incorporated into effective MOUs in other fields or contexts (Section 2.2).

2.3 Section headings

A review of existing DSAs and MOUs between the Sitka Sound Science Center (SSSC), its research team, and collaborative partners allowed for the appraisal of a variety of formats and contents of similar agreements. Initially, we examined these MOUs to identify commonly used section headings. Although the wording varied across MOUs, consistent elements identified across examined documents included: 1. Purpose, 2. Responsibilities (including mutual agreements and specific roles and responsibilities of individual project partners). Additional identified headings that were variably present within assessment

MOUs included: Background or Introduction, Statement of Purpose (Mutual Benefits and Interest), Definitions, Data ownership and access, Amendments (Modifications) and Termination, Commitment to Data Sovereignty and Intellectual Property, and Reporting. We combined these headings to create a blank MOU skeleton document (**Appendix 1**). The section headings are as follows:

- I. Background
 - II. Purpose of collaboration
 - III. Responsibilities and roles of the parties
 - IV. Data ownership, protection, storage, and access
 - V. Data publication
 - VI. Liability
 - VII. Modification
 - VIII. Signatures and approval

2.2 Specific text

To populate the skeleton MOU document, we then assessed each MOU in greater detail. Regarding the content, many commonalities were also identified in the text and word choices across MOU documents. Although these MOUs remain private and thus the specific text cannot be shared within this document, we have illustrated the wording from agreements that did not also explicitly require confidentiality (**Figure 1**).



Figure 1: Wordcloud. This image was generated using the online tool at <https://www.wordclouds.com> and a word list created from a total of six MOU documents. Input text was de-identified prior to use. The

generated word list was then extracted and filtered for nouns unique to specific project topics (e.g., the word “salmon” was removed as it related to a specific MOU agreement project topic rather than the MOU itself, however, the word “university” was not as it appeared in multiple MOU documents).

Remaining words with a frequency of two or more were subsequently input to the online tool to create the figure above.

Subjective assessment of the content of MOUs and informal discussion between SSSC staff and researchers provided additional detail regarding important elements as part of successful MOU agreements. Common elements that appeared in the majority of assessed MOUs included explicit statements of agreement lengths and definitions of specifics, including who the project partners are and what defines data or outputs of the work. To ensure future MOUs include these elements, we added editable text to the MOU skeleton (**Appendix 1**) that reflects these important and consistent inclusions. Additionally, while the specifics of each MOU varied with the project goals and content, we perceived several common topics or “themes” across MOUs appraised as part of this analysis. These themes are highlighted below:

- 1. **Aligned Mission, Vision, and Values** - Each agreement began with a statement sharing the missions of each entity involved and a strong reason for collaboration that explained why the partnership is advantageous.
 2. **Clear Lines of Communication** - The agreements explicitly detailed how entities collaborate and communicate throughout the agreement timeline. These statements included communication protocols such as regularity and format of meetings, as well as who will be in attendance, meeting management, and presenting reports of activities. It may be helpful to outline designated contacts for each party, including contacts for when primary contacts are unavailable.
 3. **Detailed Data Lifecycle Information** - Agreements detailed specifics about qualitative and quantitative data handling and the importance of ensuring confidentiality when working with sensitive data (Jarquín, 2012). Details included how meeting notes are distributed, where notes will live, and how to ensure data quality. The agreements also included the responsibilities of each party in handling data.
 4. **Ethical and Respectful Research Practices** - There is an emphasis on ensuring that credit is given where due when publishing information and collaborating with project partners throughout the project timeline. This also includes ensuring that power dynamics are addressed and the rights of communities’ resources, knowledge, and self-determination are respected.
 5. **Mutual Respect** - The overarching theme of each agreement was mutual respect for the cultures, perspectives, and conventions of project partners.

To objectively supplement these themes we utilized the qualitative research tool Atlas.ti to analyze our partners’ shared MOUs and identify major themes: Thematic elements identified using this approach included: Trust, Mutual respect, and Enhanced communications.

These subjective and objective assessments of common elements across MOU documents were used to create a supplementary guidance document (**Appendix 2**) to aid in populating the skeleton MOU.

Guidelines assist in determining what information to include under each heading by proposing that each section address the following questions: a. Why? b. What? c. When? d. Where? e. Who? and f. How? (**Figure 2**). Although specifics of roles, timelines, and specific deliverables, including data, vary across collaborative projects, by applying the questions in Appendix 2 to the MOU skeleton in Appendix 1, we aim to provide a user friendly approach to MOU creation that will stimulate important early conversation between parties and ensure success of the project.

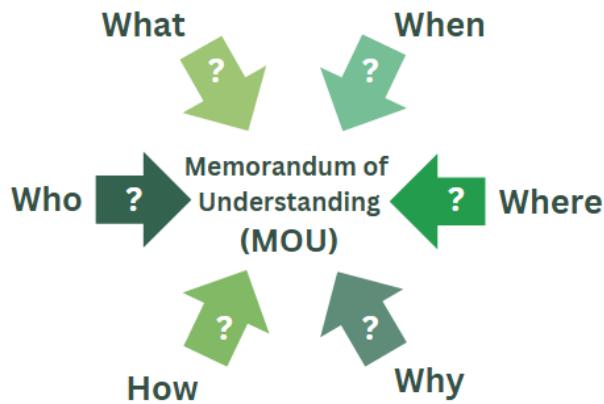


Figure 2: Visualization of the types of questions (Why? What? When? Where? Who? f. How?) that comprise an MOU and create a meaningful documentation tool for a project lifecycle.

3. Developing a successful and robust MOU

An MOU is a written, formal agreement between parties that addresses cooperative work or a shared goal to meet a given objective. While the goals of an MOU may vary, the majority document the mutual intentions and goals of the parties involved to facilitate effective cooperation. Many factors can influence the efficacy or success of such an agreement; however, in our experience, some key considerations include: Maintaining priorities, Addressing Power Dynamics, and Effective Communication.

3.1 Maintaining priorities

Based on the experience of SSSC staff and researchers, it is important to manage priorities by detailing at the outset the importance and urgency of each element of the agreement for all parties involved; The more explicit the parties can be in discussing these priorities, the more effective the document will be. Questions to consider may include: What are the highest priority goals for each group? What timeframe should goals be addressed within? Who is responsible for addressing deviations from the timeline goal achievement? Answering these and other questions will ensure the development of a comprehensive MOU that also acts as a principles and expectations documented that can be continually referenced throughout the project and beyond the end date (Figuus et al., 2022).

3.2 Addressing Power Dynamics

Oftentimes, there is some sort of inherent power dynamic that will show face when beginning initial data-sharing discussions. This might mean one agency has relatively greater power through being a State or Federal group, but power imbalance may also manifest as one agency being more financially invested or politically incentivized to achieve the goals of the project. The level of leadership investment in the project or the level of institutional research support might also create a power imbalance, as might previous experience in operation in a research or business area. An example of a power imbalance might even be the scenario where one agency selects and invites the other to participate in a project. In this scenario, one group may feel greater ownership of the work, including intellectual property. While this imbalance can be challenging to address once the project is underway, an effective MOU can define working relationships and outline expectations. While the MOU exists to protect all collaborating entities, it is often the group or individual with relatively less power that can suffer comparatively greater harm when an effective MOU is not in place. Therefore, while a group with relatively more power might have greater resources or experience in the creation of an MOU document, the group/individual with relatively less power may be more incentivized to lead the creation of an MOU, and should always play an active role in determining the terms.

3.3 Conflict Management and Scenario Planning

While disagreements can be challenging to anticipate, an MOU might detail potential scenarios that might need to be navigated and how disagreements will be resolved should they arise. In a research scenario, a disagreement might include how results are interpreted or discussed. Clear outline in an MOU of mechanisms for resolving disputes, including but not limited to who has oversight and clauses that detail resolution mechanisms like mediation and arbitration, might seem unnecessary or uncomfortable to include, but can protect all parties if disputes do occur. Scenario planning might additionally include scenarios of success, with text in the MOU outlining how future similar projects might be undertaken, and expectations of inclusion for some or all parties in future work. It may also be important to outline notice periods and conditions under which the MOU can be terminated.

3.4 Effective Communication

The more detailed and explicit a data-sharing agreement is, the less room there is for miscommunication of intentions or misinterpretation of the document. Text should be drafted through active discussion between all parties, with care taken to ensure that one party is not dictating terms to the other. Additionally, although the MOU is a formal document, it should be worded as understandably as possible, with the minimum of jargon or florid legal content. All parties should be in agreement.

3.5 Leadership Involvement

Although the most active participants in work detailed within a given MOU may be researchers, community members, or even students, it is likely their commitment to the work that will ensure project failure or success (Ifran et al., 2021), leadership engagement is also important, particularly given that an MOU is not a legally binding document. Employee turnover, leave, or other unforeseen circumstances have the potential to severely impact projects or research collaborations. It is therefore important that

the leadership of all parties has a full understanding of the terms of an MOU and ideally, participates in agreement to these terms in writing.

Agreements should be:	Agreements should provide:
<ul style="list-style-type: none">• Explicit• Timebound• Frequently reviewed• Legally enforceable• Clear about data sharing and publishing	<ul style="list-style-type: none">• A plan for ongoing communications about data stewardship• Definitions for mutually agreed-upon terms without being exclusively prescriptive• Information-gathering protocols and methods that are agreed upon by all participants (Yua et al., 2022)

Table 1: The data sharing agreement guidelines are from (Turner et al, 2024) unless explicitly stated otherwise

4. Conclusion

Because every individual processes information differently, it can be easy to misinterpret, forget, or misunderstand the aims of our research partners. This is where MOU development proves fruitful because it helps groups document expectations to get on the same page. Previous research on DSA and MOU efficacy, including the work by Allen et al., highlights the importance of flexibility in amending or adapting DSAs as needed (Allen et al., 2014). Although the goal of an MOU is for all parties to adhere to its terms, it can also serve as a living document that is modified as needs or timelines shift.

Developing an MOU with project partners addresses two foundational components of research engagement. The first component is a written contract clearly defining roles, responsibilities, timelines, and data management practices. Although an MOU is not legally binding, this written contract protects the engaged parties through documentation. The second component is a means to stimulate conversation, thereby strengthening relationships. If all engaged project partners are satisfied with the resulting MOU and it is revisited and revised throughout the project timeline, the effort can be considered successful. Even more successful would be if all parties were eager to continue collaborating on future projects.

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Appendix 1:

MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN PROJECT PARTNER ONE AND PROJECT PARTNER TWO AND

FROM START DATE - END DATE REGARDING ACTIVITIES OF PROJECT TITLE

This Memorandum of Understanding (MOU) sets forth the terms and understanding between the Sitka Sound Science Center (SSSC) and Project Partner One, Project Partner Two, etc (collectively referred to as the parties) as part of the collaborative enterprise titled; "Project Title Here".

This MOU is agreed upon and entered into from this date **DATE HERE** until the stated project end points.

The parties recognize their shared interest in **(state shared interest here)**.

I. PURPOSE OF COLLABORATION

State purpose and goals of MOU

II. STATEMENT OF MUTUAL BENEFIT AND INTEREST

State missions of project partners, definition of document terms that may not be well understood

III. RESPONSIBILITIES AND ROLES OF THE PARTIES

Project partner one, project partner two, ... , agree to the following:

PROJECT PARTNER ONE WILL:

- Bullet each agreed-upon responsibility

PROJECT PARTNER TWO WILL:

- Bullet each agreed-upon responsibility

Meetings will be managed with the following guidelines:

IV. DATA OWNERSHIP, PROTECTION, STORAGE, AND ACCESS

- Bullet each explicit data-sharing directive

V. DATA PUBLICATION

How will credit be given where due if published?

VI. FUNDING

VII. NONBINDING AGREEMENT

Enter text here.

VIII. MODIFICATION

Amendment or renewal of this memorandum may be proposed at any time during the performance period by any party and shall become effective only when amended in writing and signed by all parties. **Explicitly state how often the agreement will be updated**

IX. TERMINATION. Any of the parties, in writing, may terminate this MOU in whole, or in part, at any time before the date of expiration.

X. SIGNATURES AND APPROVAL

This MOU will take effect upon the date of the last signature and will be in effect through project end date.

PROJECT PARTNER ONE

PROJECT PARTNER TWO

PROJECT PARTNER

By: _____

By: _____

By: _____

Print Name: _____

Print Name: _____

Print Name: _____

Title: _____

Title: _____

Title: _____

Contact: _____

Contact: _____

Contact: _____

Date: _____

Date: _____

Date: _____

Appendix 2:

MEMORANDUM OF UNDERSTANDING (MOU) CHECKLIST

To begin formulating an MOU at project inception, following directed relationship building and alignment of mission statements and goals, it is important to have direct conversations with collaborators. This conversation should include discussion of the “why, what, when, where, who, and how” of the project. The following check list is not comprehensive, but instead provided as a starting place for parties to identify and address important topics to be covered in an MOU.

Who

- Who are the project partners, including entities and specific people?
- Who will be involved in what elements of the work (including who will lead specific elements, and be responsible for delivery)?
 - Administration of funds or other administrative duties
 - Data collection
 - Specific analyses
 - Report writing
 - Outreach or dissemination
- Who will be included in the initial discussion of project results and interpretation of findings?
- Who will be consulted as part of publication drafting?
- Who will lead peer-reviewed publication of results?
- Who owns data?
- Who stores what data?

What

- What is the project title and funding source?
- What will be done specifically within the scope of the project:
 - Will knowledge be co-produced? If so, how will that work?
 - What will be the specific outputs of the project?

When

- When will this project take place (including explicit time boundaries)?
- When will the data be made freely available?
- When will different results and data be shared back if this is a component of the work (be explicit)?
- When will deadlines for specific goals be set?

Where

- Where will this project occur?
 - Where will data be collected?
- Where will data be stored?
- Where will data be archived?
- Where will data go after project completion?
- Where will the data be published?

Why

- Why is this DSA/MOU in place?
- Why is this research important?
- Why are different participants in the MOU included at different levels of the project plan?

How

- How will the entities and people work together
 - How will data be collected, stored, and archived?
 - How will collaboration be approached (will parties communicate by email, phone, in person)?
- How is data defined, including as samples or digital information from analyses?
- How will data/outputs be shared (peer-reviewed manuscript publication, presentation of findings, etc)?
- How will the project ensure that credit is given where due in publications and other data-sharing avenues?
- How will the agreement be modified if a need is identified to do so?
- How will a breach of the agreement be identified and addressed?