DOT SMART Grant MHA Nation Drone Project: Planning and Protocol Development

Project Contact Information

Please provide as much of the the following information as possible:

1. **Name of the project;**
2. **Grant number;**
3. **Name of the person submitting this DMP;**
4. **ORCiD of the person submitting this DMP (need an ORCID? Register here: https://orcid.org/);**
5. **Email and phone number of the person submitting this DMP;**
6. **Name of the organization for which the person submitting this DMP is working;**
7. **Email and phone number for the organization;**
8. **Link to organization or project website, if applicable; and,**
9. **Date the DMP was written.**

1. DOT SMART Grant MHA Nation Drone Project: Planning and Protocol.
2. SMARTFY22N1P1G38 I
3. Kerry E. Hartman
4. 0009-0005-8929-2867
5. khartm@nhsc.edu 701-426-8936
6. Nueta Hidatsa Sahnish College
7. www.nhsc.edu 701-627-8053
8. www.nhsc.edu
9. 4.10.2024

Data Description

Please provide as much information as possible:

1. **Provide a description of the data that you will be gathering in the course of your project or data from a third party that you will re-use, if any;**
    1. **If there will be no data collected or re-used from another source, state that this is case;**
        1. **If you answered "No data" above, then you are finished and may skip the most of the steps and sections below, after you:**
            1. **Save your DMP as it exists;**
            2. **Submit it to your Grant Manager or the NTL staff for review.**
2. **Address the expected nature, scope, and scale of the data that will be collected, as best as you can at this stage;**
3. **As best as you can, describe the characteristics of the data, their relationship to other data, and provide sufficient detail so that reviewers will understand any disclosure risks that may apply;**
    1. **If data might be sensitive, please describe how you will protect privacy and security, if you know that now;**
    2. **You may need to update your DMP later to add more detail;**
4. **Discuss the expected value of the data over the long-term.**

1. Data types are as follows: 1. Text and tabular data: Data associated with reports, collection of input from stakeholders, etc.; 2. Test/demonstration data: Data associated with executing tests/demonstrations (e.g., flight log data); 3. Modeling data: Economic modeling; and GIS data.

2. The project team across institutions utilizes Microsoft Teams as a platform for group meetings and to house documents with shared access to text and tabular data such as meeting minutes, reports, contact lists, etc. The data are associated with the MHA region and with plans for enabling operations for this region.
3. Community perceptions data are sensitive with access and use described in other Section 4.1 of the DMP. In addition, data collected during test flights are safety-critical and are related to other test flight data in that aggregating those data, which is not a part of this effort, enables a comprehensive understanding of safety. Any flight test data related to privacy will be handled using standard processes, such as those used by the NPUASTS. Finally, GIS data include information regarding population density, etc. Owing to their nature, they may be sensitive. Thus, access to all data will be controlled to protect privacy and ensure security.
4. Data will continue to support project implementation after Stage 1. Gather information to explore needs to transport beyond visual line of sight as the Project builds on plans to link to the Vantis network, explore additional use cases that address Tribal needs, develop reports on workforce development activities, and gather economic data to determine economic feasibility, and flight plans and implementation of flight data.

Data Format and Metadata Standards Employed

Please provide as much information as you can:

1. **Describe the anticipated file formats of your data and related files;**
2. **To the maximum extent practicable, your DMP should address how you will use platform-independent and non-proprietary formats to ensure maximum utility of the data in the future;**
    1. **If you are unable to use platform-independent and non-proprietary formats, you should specify the standards and formats that will be used and the rationale for using those standards and formats.**
3. **Identify the metadata standards you will use to describe the data.**
    1. **At least one metadata file should be a DCAT-US v1.1 (https://resources.data.gov/resources/dcat-us/) .JSON file, the federal standard for data search and discovery.**

1. xlsx, .csv, .doc, .jpeg, .pdf, .png, common flight-log data formats (e.g., .tlog), and GIS data types.
2. As applicable, the project will follow open standards and formats when feasible.
3. Team will follow data conventions for each data type. The final data will have a DCAT-US v1.1 (https://resources.data.gov/resources/dcat-us/) .JSON metadata file, which is the federal standard for data search and discovery to be compliant with the USDOT Public Access Plan.

Access Policies

In general, data from DOT-funded projects must be made publicly accessible. Exceptions to this policy are: data that contain personally identifiable information (PII) that cannot be anonymized; confidential business information; or classified information. Protecting research participants and guarding against the disclosure of identities and/or confidential business information is an essential norm in scientific research. Your DMP should address these issues and outline the efforts you will take to provide informed consent statements to participants, the steps you will take the protect privacy and confidentiality prior to archiving your data, and any additional concerns. In general, in matters of human subject research, your DMP should describe how your informed consent forms will permit sharing with the research community and whether additional steps, such as an Institutional Review Board (IRB), may be used to protect privacy and confidentiality. Additionally, when working with, or conducting research

that includes Indigenous populations or Tribal communities, researcher will adhere to the CARE Principles for Indigenous Data Governance https://www.gida-global.org/care and make an explicit statement to that effect in this portion of the DMP.

Please provide as much information as possible:

1. **Describe any sensitive data that may be collected or used;**
2. **Describe how you will protect PII or other sensitive data, including IRB review, application of CARE Principles guidelines, or other ethical norms and practices;**
    1. **If you will not be able to deidentify the data in a manner that protects privacy and confidentiality while maintaining the utility of the dataset, you should describe the necessary restrictions on access and use;**
3. **Describe any access restrictions that may apply to your data;**
4. **If necessary, describe any division of responsibilities for stewarding and protecting the data among Principal Investigators or other project staff.**

1.Information from listening sessions in a World Café format will be gathered in a public forum to internally inform the project staff and advisory board. General themes from the listening sessions will be reported to DOT as advised by UND's IRB. In public forums (i.e., World Cafe listening sessions), it will be clearly stated that it is a public forum. Given the focus of operations on tribal lands, there is significant sensitivity regarding data management and control. In addition, flight tests data and GIS data involve privacy concerns.

2. Pending MHA tribal resolution and UND's IRB approval, additional focus groups and depth interviews will be conducted over the course of the project with guidance from the advisory board. This will result in data from individuals at MHA Nation who provide informed consent to participate within the guidelines of UND IRB and tribal protocols. The project will also follow guidance provided by CARE Principles for Indigenous Data Governance (https://www.gida-global.org/care).

3. All data will only be accessible by research personnel and protected by passwords and encryption. The Tribe will determine what data will be released and Tribal approval will need be secured prior to being released.

Re-use, Redistribution, and Derivatives Products Policies

Recipients are reminded:

1. **Data, as a collection of facts, cannot be copyrighted under US copyright law;**
2. **Projects carried out under a US DOT SMART Grants is federally funded; therefore, as stated in grant language:**
    1. **Recipients must comply with the US DOT Public Access Plan, meaning, among other requirements, project data must be shared with the public, either by the researchers or by US DOT;**
    2. **That by accepting US DOT funding through this grant, recipients have granted to US DOT a comprehensive non-exclusive, paid-up, royalty-free copyright license for all project outputs (publications, datasets, software, code, etc.). This includes all rights under copyright, including, but not limited to the rights to copy, distribute, prepare derivative works, and the right to display and/or perform a work in public; and,**
    3. **In accordance with Chapter 18 of Title 35 of the United States Code, also known as the Bayh-Dole Act, where grant recipients elect to retain title to any invention developed under this grant, US DOT retains a statutory nonexclusive, nontransferrable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any such invention throughout the world.**

Please provide as much information as possible:

1. **Describe who will hold the intellectual property rights for the data created or used during the project;**
2. **Describe whether you will transfer those rights to a data archive, if appropriate;**
3. **Identify whether any licenses apply to the data;**
    1. **If you will be enforcing terms of use or a requirement for data citation through a license, indicate as much in your DMP;**
4. **Describe any other legal requirements that might need to be addressed.**

1. Project will follow the intellectual property guidelines of SMART program and the IP policies of each institution included in the project.
2. Team will follow MHA Nation Guidelines and legal policies regarding any data transfers.
3. Not applicable at this time.
4. Project will adhere to all MHA Nation legal requirements.
5. The Tribe will determine what data will be released and Tribal approval will need be secured prior to being released. This applies to 1 through 4 above.

Archiving and Preservation Plan

Please provide as much information as possible:

1. **State where you intend to archive your data and why you have chosen that particular option;**
2. **Provide a link to the repository;**
3. **You must describe the dataset that is being archived with a minimum amount of metadata that ensures its discoverability;**
    1. **Whatever archive option you choose, that archive should support the capture and provision of the US Federal Government DCAT-US Metadata Schema https://resources.data.gov/resources/dcat-us/**
4. **In addition, the archive you choose should support the creation and maintenance of persistent identifiers (e.g., DOIs, handles, etc.) and must provide for maintenance of those identifiers throughout the preservation lifecycle of the data;**
5. **Your plan should address how your archiving and preservation choices meet these requirements.**

1. Pending MHA Tribal and UND IRB approval, de-identified data files will be stored on a password protected computer. Upon completion of the grant, the data will continue be housed at MHA and will be considered sensitive and protected information.

Data will be retained on a secured drive after project completion for 5 years after the grant. Public dissemination of any data or whether the research is published is at the discretion of MHA. If given tribal council approval, aggregated results may be disseminated in journal articles, research reports, or conference presentations.

2. There is not yet a data repository link. Data will be stored at NHS College. Linking to any project data would require MHA approval and approval of any related subcontractor according to their rules and regulations, including IRB. No such approvals are yet in place.

3. If data within the repository are enabled for public disclosure, metadata will be provided for each dataset/type as appropriate. At a minimum, the DCAT-US schema will be applied for such data.

4. Data that are enabled for public disclosure will support these protocols.

5. If data are enabled for public disclosure, discoverability will be enabled through standard web/internet processes.

6. The Tribe will determine what data will be released and Tribal approval will need be secured prior to being released. This applies to 1-5 above.

Planned Research Outputs

Dataset - "MHA Nation Drone Project: Planning and Protocol Development "

The MHA Drone Project: Planning and Protocol Development Project Team developed a comprehensive plan for the use of drones to serve the Tribal members of the Three Affiliated Tribes (TAT) of the Fort Berthold Reservation (otherwise known as the Mandan Hidatsa Arikara (MHA) Nation) to increase access to medical care and equipment, and potentially other use cases with opportunities for application for Stage 2 funding.

The Fort Berthold Reservation, a federally recognized Indian Tribe, is in north-central North Dakota (ND), within a rural, rugged landscape with heavy oil production, rough roads, and unforgiving weather. The goals and objectives identified in the proposal were: (1) identifying additional use cases, which included completion of two surveys of stakeholder needs and perceptions and a summary report with the findings of six listening sessions that were shared broadly with key Tribal stakeholders; (2) developing a blueprint for a safe, efficient, and scalable network for use of drones on our Tribal lands, which was accomplished by conducting a beyond visual line of sight (BVLOS) demonstration of delivery of medication that provided the opportunity to gather gata to monitor the airspace system; (3) development and implementation of a robust workforce engagement plan, by finalizing an aeronautics articulation agreement between two educational grant partners with the primarily online program to begin in August 2025, offering three Drone Camps in 2023/2024/ 2025, and teaching over 200 youth at remote MHA Nation schools through a Drones in the Schools effort; (4) ensuring comprehensive community engagement and partnerships to support government to government relationships, by assembling and hosting monthly MHA Drone Advisory Board to guide efforts and testifying before the MHA Tribal Business Council to secure required resolutions including a corridor for drone delivery between two remote communities; and (5) exploring the economic feasibility of drone use at-scale by completing a comprehensive economic analysis of costs and benefits.

The MHA Drone Project: Planning and Protocol Development Project Team developed a comprehensive plan for the use of drones to serve the Tribal members of the Three Affiliated Tribes (TAT) of the Fort Berthold Reservation (otherwise known as the Mandan Hidatsa Arikara (MHA) Nation) to increase access to medical care and equipment, and potentially other use cases with opportunities for application for Stage 2 funding.

The Fort Berthold Reservation, a federally recognized Indian Tribe, is in north-central North Dakota (ND), within a rural, rugged landscape with heavy oil production, rough roads, and unforgiving weather. The goals and objectives identified in the proposal were: (1) identifying additional use cases, which included completion of two surveys of stakeholder needs and perceptions and a summary report with the findings of six listening sessions that were shared broadly with key Tribal stakeholders; (2) developing a blueprint for a safe, efficient, and scalable network for use of drones on our Tribal lands, which was accomplished by conducting a beyond visual line of sight (BVLOS) demonstration of delivery of medication that provided the opportunity to gather gata to monitor the airspace system; (3) development and implementation of a robust workforce engagement plan, by finalizing an aeronautics articulation agreement between two educational grant partners with the primarily online program to begin in August 2025, offering three Drone Camps in 2023/2024/ 2025, and teaching over 200 youth at remote MHA Nation schools through a Drones in the Schools effort; (4) ensuring comprehensive community engagement and partnerships to support government to government relationships, by assembling and hosting monthly MHA Drone Advisory Board to guide efforts and testifying before the MHA Tribal Business Council to secure required resolutions including a corridor for drone delivery between two remote communities; and (5) exploring the economic feasibility of drone use at-scale by completing a comprehensive economic analysis of costs and benefits.

Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
MHA Nation Drone Project: Planning and Protocol De ...	Dataset	2026-01-27	Open	Zenodo Zenodo		Creative Commons Attribution 4.0 International	DCAT-US	No	No