

Plan Overview

A Data Management Plan created using DMP Tool

DMP ID: <https://doi.org/10.48321/D17D4S>

Title: Cascade Gateway Advanced Border Information System (ABIS) Design Project

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Funder: United States Department of Transportation (DOT) ([transportation.gov](https://www.transportation.gov))

Funding opportunity number: NOFO #20.941

Grant: https://www.transportation.gov/sites/dot.gov/files/2022-09/FY22%20SMART%20Grants%20NOFO_Final.pdf

Template: SMART Grants Stage 1 Data Management Plan (DMP)

Project abstract:

The Cascade Gateway Advanced Border Information System (ABIS) Design Project will evaluate technologies to replace and improve aging wait time systems at the region's U.S. – Canadian border crossings. The project will develop an implementation plan for a binational wait time system that will solve current system challenges and support additional features including an anti-idling system to reduce greenhouse gas emissions; data feeds to inspection agencies; an online, publicly accessible data archive; and real-time traffic operations applications including websites and variable message signs. This planning phase will assess options, coordinate stakeholder participation, and develop an installation plan for the ABIS. This project fits within two technology areas: intelligent, sensor-based infrastructure, and systems integration.

Start date: 09-01-2023

End date: 03-01-2025

Last modified: 04-10-2025

Cascade Gateway Advanced Border Information System (ABIS) Design Project

Dataset and 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. Cascade Gateway Advanced Border Information System (ABIS) Design Project
2. NOFO #20.941
3. Melissa Fanucci
4. 0009-0004-6844-9370
5. Melissa@wcog.org / (360) 685-8385
6. Whatcom Council of Governments (WCOG)
7. wcog@wcog.org / (360) 676-6974
8. <https://wcog.org/>
9. December 15, 2023

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;
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.

Description

This project, funded through Stage 1 of the SMART Grants program, will evaluate technologies to replace and improve aging wait time systems at the Cascade Gateway system of border crossings between the Lower Mainland of British Columbia and Whatcom County of Washington State. This Stage 1 project will focus on the systems engineering process, which will assess the state of the existing system and look toward a future improved/replacement system. This includes gathering user needs from stakeholders that include the Whatcom Council of Governments (WCOG), United States Customs and Border Protection (USCBP), the Canadian

Border Services Agency (CBSA), the Washington State Department of Transportation (WSDOT), and the British Columbia Ministry of Transportation and Infrastructure (BCMOTI), resulting in the development of a Concept of Operations for the future system. The Stage 1 project will conclude with the development of a High-Level Design, System Requirements, and Implementation Plan, which will ultimately be used to procure/implement the system as part of a future Stage 2 project (note that this document refers to the current project that is funded through Stage 1 of the SMART Grants Program as “the Stage 1 project”, and a future project that is anticipated to be funded through Stage 2 of the Smart Grants Program as “the Stage 2 project”).

As such, this Stage 1 project will not involve the deployment of any new sensors or technologies that will collect new data. It will not be until the future Stage 2 project commences that data from the existing system will be evaluated against data from the future system to compare the accuracy and reliability of the two systems. The Data Management Plan will be updated as part of the future Stage 2 project.

Scope and Scale

As described previously, the Stage 1 project will not involve the collection of new data. Existing data and information will be used for the systems engineering process; to evaluate and eventually select the most appropriate technology solution, the project will be gathering and analyzing the following:

- **Existing wait time system technology, accuracy, and reliability.** The existing system collects data from in-pavement inductive loop detectors in the field and stores it in the Cascade Gateway Border Data Warehouse (see the section *Data Format and Metadata Standards Employed* for additional details). The project team will also conduct site surveys at the existing land Ports-Of-Entry (POEs), which will involve visual investigations of existing systems and equipment and result in scanned field notes and photographs in .JPG format.
- **Existing technologies applied elsewhere,** with a focus on cross-border environments, gathering information about how well they fit project parameters (analyzing accuracy, cost effectiveness, environment, mobility, futureproofing, standards and interoperability, feasibility, and anti-idling capabilities). The project team will conduct an industry scan/literature review to review current border wait time measurement technologies.

The Stage 1 project will result in presentations, documents, and reports (.PPTX, .DOCX, and .PDF formats) being produced as part of the systems engineering process.

The Stage 2 project will primarily focus on the deployment of the future system but will also include a before-and-after study that compares the accuracy and reliability of the existing condition against the future system. This section will be updated as part of the future Stage 2 project.

Characteristics

The existing wait time system does not collect any sensitive information; vehicle counts and classifications are collected using inductive loop detectors, which are not capable of collecting Personal Identifiable Information (PII). The data is stored on the Cascade Gateway Border Data Warehouse, where data that includes traffic volumes, delays, and speeds is available for public consumption.

The future Stage 2 project will involve the deployment of new sensors and technologies to collect more accurate and reliable data to enable improved wait time measurement. At this time, the specific technologies for the future system have not yet been identified, so the potential extent of sensitive data that may be collected is yet to be determined. This section will be updated as part of the future Stage 2 project.

Sensitivity

Data compiled from existing research and the current system will have no sensitivity concerns. Any new data gathered from the project itself will be subject to both United States and Canada’s strict privacy laws, limiting the ability to gather any sensitive or personal data from sources used to measure delay.

Value Outside of this Project

The data compiled for this project on the existing system and other technologies will be valuable to any other region looking at implementing a wait time system, especially in multi-modal environments with geographic restrictions like a border crossing.

Comparing data on the existing wait time system and the potential options from a new system will form the basis of a cost-benefit analysis for regional agencies planning to invest in a new system.

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.

Data from the existing wait time system can be accessed publicly from the [Cascade Gateway Border Data Warehouse](#). All data adheres to United States and Canadian privacy laws and can be exported in .CSV and .PDF (charts and tables from the Tableau dashboard, as well as custom query outputs in .CSV format). In addition, the full archive is accessible via an API in JSON format for use by other public and private entities. Existing data feeds utilized by the Border Data Warehouse include the following XML-formatted data feeds:

- Southbound loop detector data from BCMOTI, stored in 5 minute increments and available for 7 days.
- Northbound loop detector data from WSDOT, stored in 5 minute increments and available for 24 hours.
- Southbound inspection booth data (e.g. number of passengers, what state/province their license plate indicates, lane number, lane status – NEXUS vs Car vs Ready) from USCBP, stored in 10 minute increments and only one file is available at a time.

As described previously, the Stage 1 project will not involve the collection of new data. This section will be updated as part of the future Stage 2 project to reflect any new data that will be collected with the future system.

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 to 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.**

Sensitivity in Stage 1 Design Data

Data gathered as part of this specific project, the design component of the Cascade Gateway Advanced Border Information System, will not have any sensitivity issues. Data will be specific to the functioning of technology.

Data may be gathered from cross-border travelers as part of a planned passenger vehicle intercept survey in 2024/2025 to provide input on how the existing wait time system is currently being used, opinions regarding existing system accuracy, and improvements desired. The survey would be conducted in partnership with Western Washington University's Border Policy Research Institute (BPRI) and abide by all ethical specifications and informed consent requirements to outline the purpose of the brief survey, the anonymity of responses, and the voluntary nature of any survey participation.

The only other sensitivity consideration in Stage 1 would be any analysis of cross-border inspection times. Current datasets abide by U.S. and Canadian privacy laws. However, the inspection times may be considered sensitive data by federal inspection agencies and will therefore be aggregated in such a way as to prevent any individual from being able to identify patterns of behavior or actions undertaken by the inspection agency.

Sensitivity in Stage II Implementation Data

Data collected as part of the final technology chosen for the implementation phase will be subject to U.S. and Canadian privacy laws, meaning that any datapoints that can be traced back to an individual must be scrubbed from the system and not stored. This section will be updated as part of the future Stage 2 project.

Access Restrictions

Data from this Stage 1 project will not need to be restricted. Data from the Stage 2 implemented project will have data restrictions based on the needs of the parties providing the data and are unknown at this time, but archived data will be available to the public. This section will be updated as part of the future Stage 2 project.

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.

Intellectual Property Rights

The results of the systems engineering process from the Stage 1 project, prepared by the Transpo Group USA, Inc. (Transpo) team, will become the property of WCOG and the Transpo team, but will be made publicly available and subject to public disclosure requirements. The specific systems, technologies, and sensors that may be deployed as part of the future Stage 2 project are not known at this time, so their intellectual property rights cannot yet be identified. This section will be updated as part of the future Stage 2 project.

Data Archiving

Part of the project scope requires data to be dynamically stored in the [Cascade Gateway Border Data Warehouse](#), an online archive of five-minute increment wait time data for all four Cascade Gateway ports-of-entry that dates back to 2005.

The archive is owned and maintained by the Whatcom Council of Governments, who shares the data with the public and partner agencies through its website at www.borderdata.org. It is anticipated that data from the future system will continue to be stored in a similar manner. This section will be updated as part of the future Stage 2 project.

Licensing

No licensing will be required in the Stage 1 project. If third-party data components are used as part of Stage 2 implementation, any licensing agreement will require these data to be shared publicly in the [Cascade Gateway Border Data Warehouse](#).

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.**

As described previously, the Stage 1 project will not involve the collection of new data. Data from the existing system will continue to be available through the Whatcom Council of Governments via the [Cascade Gateway Border Data Warehouse](#). It is anticipated that data from the future system will continue to be stored in a similar manner. The System Requirements that will be developed as part of this Stage 1 project will include a requirement to support and adhere to the U.S. Federal Government DCAT-US Metadata Schema. This section will be updated as part of the future Stage 2 project.

Project files may include reference documents, reports/documents from other projects, native report files, etc., which will be stored on SharePoint and accessible by WCOG and the Transpo team, as well as on Transpo's project servers, where data will be retained per company policies for a minimum of 7 years.

Planned Research Outputs

Text - "Cascade Gateway Advanced Border Information System (ABIS) Design Project Final Reports"

This collection of reports represent the deliverable outputs from the Cascade Gateway Advanced Border Information System (ABIS) Design Project. The collection includes the following:

- 1- Current State Assessment & Existing Technology Review Report
- 2 - Concept Exploration & Recommendations Report
- 3 - Concept of Operations
- 4 - Benefit Cost Analysis Technical Memo
- 5 - Project Implementation Report
- 6 - High Level Design

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? |
|--|------|--------------------------|----------------------|--------------------------|-----------------------|--|----------------------|-----------------------------|------------------|
| Cascade Gateway Advanced Border Information System ... | Text | 2025-04-09 | Open | ROSA P | | Creative Commons Attribution 4.0 International | DCAT-US | No | No |