Updating Present Aerial Image Acquisition and Aerial Image Reproduction Processes for the Montana Department of Transportation

Request for Information

March 20, 2006

Overview

The Montana Department of Transportation (MDT) is soliciting information pertaining to updating present aerial image acquisition and aerial image reproduction processes from film and chemical methods to fully digital processes. In addition, the MDT is looking for information on scanning its aerial film library, developing a storage system for digital aerial images, enhancing a database interface used to manage MDT's aerial film library and developing a database interface to be used for managing land survey information.

MDT presently acquires aerial imagery on film using a Leica RC30 aerial camera system; develops aerial film using a Kodak Versamat film processor; manually annotates the aerial film with roll and exposure numbers after processing; microfilms the aerial film for later previewing; catalogs the film information in a database; scans mapping and other select imagery using a Leica DSW500 aerial film scanner; makes contact prints using an Electronic Photo Control dodging contact printer and Kodak 125A paper processor; and provides aerial photo enlargements using a K&E enlarger and Kodak 125A paper processor. MDT is seeking information on electronic techniques that would eliminate the film and chemical processes now being utilized.

Process

This RFI is issued solely for information and planning purposes and does not constitute a solicitation for bids. Responses to the RFI will not be returned. Responses to the RFI are not considered an offer and are not considered by the MDT as a binding contract. Responders are solely responsible for all expenses associated with responding to this request.

Requirements

MDT has identified five major components for this RFI. If subcomponents are necessary to complete a major component and are not specifically listed, please identify them and include them in your response.

1. **Hardware and software systems for acquiring digital aerial imagery and other aerial sensory data.**

   MDT uses aerial imagery for a variety of purposes including planning, public displays, ortho photo production and aerial mapping. The most demanding of these applications is the aerial mapping application followed by the ortho photo application. Engineering quality aerial mapping is provided using high-resolution aerial images and softcopy photogrammetry systems. Typically, imagery used for engineering quality aerial mapping by MDT has a pixel resolution ranging from 0.025m to 0.05m. High-resolution ortho photos with pixel resolution in the 0.1m range are also generated.

   MDT is interested in obtaining information on digital aerial mapping camera systems, airborne LiDAR systems, or other systems that can be used to support the production of high quality aerial mapping and ortho photoproducts similar to what is presently being created.

Please provide information outlined in the RFI Response Instructions section along with the following additional information:

- A general overview of the system, major system components, system uses, system capabilities, and expected accuracies
- A general overview of aircraft and installation requirements
- Future system enhancements
- Expected maintenance
- Available training
- Estimated cost range (please breakout costs for each of the following: estimated initial purchase cost, estimated installation costs, estimated yearly maintenance costs, and estimated training costs)

2. Scanning MDT's existing aerial film library.

MDT presently has an aerial film library consisting of approximately 700 rolls of film with an estimated total of 135,000 to 175,000 images. It is estimated that each roll of film has an average of 20 projects photographed under different conditions. Approximately 98% of the imagery is black and white with the remaining 2% color. To take full advantage of the film, MDT presently uses a DSW500 photogrammetric quality scanner to scan aerial imagery to a 10-micron resolution.

MDT is seeking information on scanning its existing aerial film library. Images scanned from the aerial film library will primarily be used for making digital reprints and digital image enlargements. Digital enhancements will be made to the images on an as needed basis therefore it is critical that the scans maintain the full tonal range of the film.

Please provide information outlined in the RFI Response Instructions section along with the following additional information:

- A brief overview of how you would propose to complete this item
- Estimated cost range (please breakout costs for each significant subcomponent)

3. Digital aerial film library – storage, retrieval, querying, referencing and previewing system.

With MDT's present film library, customers query a database to generate a list of available aerial photography that may be of interest. Once this is done, individual photos of interest may by viewed on microfilm using a microfilm viewer. If photo reprints are needed, an order is placed and reprints are made from original negatives.

Georeferencing information for aerial photos in MDT's database consists of a named location and county. Georeferencing information is not presently in the form of state plane coordinates or latitude and longitude.

If MDT elects to scan its aerial film library, MDT would like to develop a system for storing, retrieving, querying, referencing and digitally previewing images. It is estimated the film library would start out with 135,000 to 175,000 images requiring up to 100Tb of storage (uncompressed files). Additional imagery would be added

each year. MDT's expectation is that the new digital imagery will be georeferenced with state plane coordinates.

This part of the RFI is targeted towards:

- Developing a system for storage of scanned aerial imagery
- A method of readily retrieving stored imagery
- A method of querying, referencing and previewing available aerial imagery. A web based graphical interface has been envisioned. The interface should be developed with provisions for accessing present imagery with limited georeferencing and new imagery with state plane georeferencing.

Please provide information outlined in the RFI Response Instructions section along with the following additional information:

- A brief overview of how you would propose to complete this item
- Estimated cost range (please breakdown for each significant subcomponent of this major component, i.e.-hardware components, software, programming, etc.)

4. Digital aerial images – digital reprinting

MDT presently has a demand for aerial image reproductive products including contact prints and photo enlargements. MDT presently has the capability of providing 10" x 10" contact prints of aerial images and can provide up to 48" x 60" enlargements. If MDT elects to scan its aerial film library, MDT would like to eliminate traditional film, paper and chemical photo processes and move to a pigment based digital printing process.

This portion of the RFI is targeted at obtaining information on available digital printing processes for aerial imagery. Outlined processes need to produce photo quality B/W and color prints of aerial images in the sizes outlined above. Uncompressed file sizes for aerial images range from 0.5Gb to 2.0Gb.

Please provide information outlined in the RFI Response Instructions section along with the following additional information:

- A general overview major system components and capabilities
- Estimated cost range (please breakout costs for each significant subcomponent)
- Expected annual operational and maintenance costs

5. **Survey database and interface**

   MDT collects control and cadastral survey data that is valuable to MDT and others years after it is collected. The present method of storing this information on MDT's document management system does not facilitate quick searches or retrieval of the information by either MDT personnel or public. Users of this information could better be served if this data were downloaded to a database where the information could be searched and retrieved quickly, possibly a web-based system with a graphical interface.

   It is estimated MDT has up to 10,000 survey points that would initially populate the database with several thousand points being added each year.

   Please provide information outlined in the RFI Response Instructions section along with the following additional information:

   - A brief overview of how you would propose to develop a survey database and interface
   - Estimated cost range (please breakout costs for each significant subcomponent)

RFI Response Instructions

MDT is asking that all interested parties submit a response to any or all of the five major components indicating their interest in providing outlined goods and services. In addition to the items specifically requested for each individual component, the response should contain the following information:

- Your interest in providing the goods and services
- A brief list of past experience providing similar goods and services
- A list of additional goods and services that may be necessary if you determine MDT has not identified all necessary components
- Cost estimates for the goods and services to be provided. All cost estimates should include both a high and low estimate.
- An estimate of the time frame that would be required from the start of the project through final implementation

Please note that the State of Montana and MDT have specific requirements related to computer applications that may impact proposed solutions, costs, and time frames. Requirements are available at the following website: http://itsd.mt.gov/policy/software.asp

Response due: By 3:00 PM, April 10, 2006, please return three (3) copies of your response to:

Diane Tordale
Montana Department of Transportation
PO Box 201001
Helena, Montana 59620-1001

1.0 QUESTIONS AND ANSWERS

Procedural, administrative or contractual questions and answers:

Diane Tordale
406-444-6365
ditordale@mt.gov

Technical or requirements questions and answers

Bryce Larsen
406-444-6321
blarsen@mt.gov