

# Montana Land Information Advisory Council

Issue Action Form  
For Council Resolution Date  
(Date of next MLIAC meeting)

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1. What action is requested of the council?

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2. Please attach a brief (One-page or less) narrative describing the issue. This form and the narrative must be provided to MLIAC staff so that it can be provided to Council members no less than one week in advance of the scheduled meeting.

3. The following organizations endorse this action:

- |   |                                     |
|---|-------------------------------------|
| <input type="checkbox"/> MAGIP          | <input type="checkbox"/> Tribal     |
| <input type="checkbox"/> MARLS          | <input type="checkbox"/> University |
| <input type="checkbox"/> County Agency  | <input type="checkbox"/> Private    |
| <input type="checkbox"/> State Agency   | <input type="checkbox"/> Other      |
| <input type="checkbox"/> Federal Agency |                                     |

Specify:

4. What are the benefits of supporting this issue?

5. What are the costs or resource requirements to support this issue?

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6. Signature of Submitter

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7. Signature of Council Member if different than 6

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8. Date

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## This portion to be completed by the MLIAC Chair and forwarded for action.

This Issue has been presented, discussed, and voted upon by The Montana Land Information Advisory Council and has been:  accepted for council action.  denied for council action

The following action will be taken and reported on at the next council meeting:

This action is assigned to: \_\_\_\_\_ Date: \_\_\_\_\_.

## MLIAC Guideline to Adopt Persistent Unique Identifiers for Geographic Features, and Standardized Date and Editor Fields for Federated Datasets

Requested Action: Motion to adopt the following as a Montana Land Information Advisory Council guideline for feature-level metadata (see Table 1):

1. Persistent unique identifiers for geographic features collected and maintained by the State of Montana.
2. Date a record was created as date\time field, the date a record was last edited as date\time field, and the name of the editor as a string field of length 50 as required fields in any federated database and a best practice for all databases containing geographic features.
3. Request the department to pursue the above as a standard for geographic data developed, maintained, and distributed by State of Montana agencies.

Table 1: Components of feature-level metadata and identifiers for federated data

	Field	Description	Data Type	Length
1	Persistent Unique Identifier	Montana Standard Persistent Unique Identifier consisting of <entity identifier>.<dataset identifier>.<local record identifier>	String	25
2	Created	Date record was created	Date\Time	
3	Last Edit	Date record was last modified	Date\Time	
4	Editor	Individual who last modified the record	String	50

Background: In March 2006 the Critical Infrastructure and Structures Working Group hosted a data model harmonization workshop with chairs of the Transportation, Addressing, and Cadastral. The focus of the harmonization workshop was to ensure that the relationships and dependencies between the transportation, addressing, cadastral, and critical structures model were properly accounted for and documented. Of particular interest are tables and table attributes that cross multiple data models. One of the table attributes key to the successful implementation of these data models is a persistent unique identifier for a give geographic feature. In addition, the date a record was created (date\time field), the date a record was last edited (date\time field), and the name of the editor were considered fields that were required to appear in any federated database and a best practice for all databases containing geographic features.

Unique Persistent Identifiers: The rural nature of Montana with highly distributed data providers warrants a federated database approach. No single jurisdiction is likely to own and maintain all of the geographic data required. Montana defines a federated approach as a method that supports the integration and utilization of data from multiple data providers, while retaining the primary maintenance responsibility with the provider. Most of Montana's framework data model efforts have adopted a federated approach that leverages multiple data provides and thus multiple data maintainers.

Identification is important in a federated environment that relies on disconnected and distributed data maintenance. Montana data modeling efforts have adopted a standard approach to unique persistent identifier for federated datasets. Traditionally, most organizations have defined their own identification system with little regard to

uniqueness or consistent generation of identifiers across multiple organizations. The adoption of a standard data exchange mechanism utilizing persistent unique identifiers with centralized integration of data allows data providers to access data from other providers. Data from other providers can easily be tracked and identified, and centralized integration means that data from other providers is readily integrated with their own holdings. Identification and date stamping support change detection for data consumers.

Montana also considers federated data to be transactional. Records in federated tables are only retired, never deleted. Applications that utilize federate data rely on the existence (persistence) of a given record. Many domain-specific applications also build additional tables that add value to an existing federated table. The use of a unique persistent identifier and retention of all records guarantees that entities building third party tables will retain their investment.

Montana chose to implement a semi-meaningful unique identifier that consist of an entity (provider) identifier that is unique statewide, followed by a three-character literal, and followed by a unique local identifier (see Table 2). Users in Montana found the semi-intelligent identifier more suited to validating geographic features since the data provider is a component of the identifier.

Table 2: Components of the Montana persistent unique identifier

	Field	Description	Data Type	Length
1	Entity identifier	Entity identifier from the Montana Standard Table of Entity Identifiers for the provider of this record. This field cannot be altered once assigned, and cannot be null. <Entity>	Long integer	
2	Dataset identifier	The 3-character dataset identifier assigned to this table from the Montana Standard Coded Domain for Dataset Identifiers. This field cannot be altered once assigned, and cannot be null. <Dataset>	String	3
3	Record identifier	Unique persistent record identifier as assigned by the provider of this record. This field cannot be altered once assigned, and cannot be null. <Record>	Long integer	

The result is a maximum 25-character string of the form “<entity>.<dataset>.<record>”. The numeric legal entity identifier and local unique record identifier are converted to a string and concatenated with the dataset literal. In the concatenation, the root elements are delimited with a period for ease in parsing and to improve readability. The components of the identifier have the following characteristics of note:

- Montana can generate a unique long integer identifier for any legal entity. The Montana Standard Table of Entities can carry an identifier for any organization created in law or by legal action.
- The Montana Department of Administration Information Services Bureau maintains and distributes the database of unique entity identifiers, and guarantees that identifiers are unique statewide.

- The Montana Standard Table of Entities is transactional. Identifiers are never deleted when an entity becomes obsolete. The table maintains a parent-child hierarchy to retain references to organizations that may be retired or reorganized.
- The unique record identifier gives a data provider local control over the assignment and maintenance of record identifiers. Data providers may cross-reference the local numeric record identifier with a local identifier of any type that may be already in use.
- Montana institutionalizes the use and maintenance of the identifier through memorandums-of-understanding with participating entities.
- Montana has effectively tested distributed data maintenance and change detection utilizing this identifier in a federated approach.

Benefit: The direct benefit is the reduction in time and effort required to synchronize and maintain value-added ancillary databases that reference geographic features developed and maintained by other entities. The second benefit is to identify primary sources of geographic features and reduce duplication of collection when the application only may differ in attribution. The inclusion of a persistent unique identifier and data fields provides for change detection.

Cost: The costs associated with this issue are the costs associated with maintenance of a persistent unique identifier and date\editor fields within the context of the information technology environment of the data provider\maintainer. This cost is typically small relative to the benefit of only maintaining the value-added attribution to geographic features from a provider.