Idaho Technology Authority (ITA)

ENTERPRISE STANDARDS – S4000 – INFORMATION AND DATA

Category: S4246 – Recent and Historical Digital Imagery

CONTENTS:

I.   DEFINITION

See ITA Guideline G105 (ITA Glossary of Terms) for definitions.

II. RATIONALE

A statewide comprehensive, recent and historical, digital georeferenced imagery layer is a critical source of information for agriculture and precision farming; taxing entities; river and stream resource management; wildlife and habitat management; land, rangeland, and forest resources management; natural resources conservation; infrastructure and construction management; geologic resource assessment and hazard mitigation; flood risk management; water supply; scholarly research and analysis; homeland security; public safety and disaster response; business, community, and economic development needs; wildfire management, planning, and response; urban and regional planning, recreation and more. Many private sector and local, state, and federal government agencies have business needs for digital georeferenced and historical aerial imagery. The University of Idaho Library is

meeting these needs by providing a comprehensive web service for publicly accessible digital georeferenced imagery collections for Idaho.

The Recent and Historical Digital Imagery Standard is intended to facilitate the integration and sharing of recent and historical imagery, as well as to enhance the dissemination and use of other Idaho Framework datasets. This standard does not instruct how imagery is collected or designed for internal use.

This standard was developed by the Imagery Technical Working Group (TWG), a subgroup of the Idaho Geospatial Council – Executive Committee (IGC-EC). This standard will be reviewed on an annual basis and updated as needed.

III. APPROVED STANDARD(S)

See Attachment

IV. APPROVED PRODUCTS(S)

Any software capable of ingesting and displaying an Esri Imagery GeoService or Open Geospatial Consortium (OGC) standard that is appropriate for displaying imagery.

V. JUSTIFICATION

A statewide comprehensive, recent, and historical, digital georeferenced imagery layer is a critical source of information as stated under "II Rationale". The standard supports the use of imagery in a predictable format, improves collaboration, and encourages contributions to this layer.

VI. TECHNICAL AND IMPLEMENTATION CONSIDERATIONS

Any software capable of ingesting and displaying an Esri Imagery GeoService or Open Geospatial Consortium (OGC) standards appropriate for imagery.

VII. EMERGING TRENDS AND ARCHITECTURAL DIRECTIONS

Data will be shared in accordance with ITA Standard S4250 –Geographic Information System (GIS) Data Sharing Standards.

VIII. PROCEDURE REFERENCE

The format, content, and development of this standard adhere to ITA Policy P5030 - Framework Standards, ITA Standard S4250 - Data Sharing Standards and ITA Standard S4220 - Geospatial Metadata.

IX. REVIEW CYCLE

Review will occur at least annually.

X. CONTACT INFORMATION

For more information, contact the ITA Staff at (208) 605-4064.

XI. REVISION HISTORY

02/15/2023 – Standard made available for public review and comment.

STATE OF IDAHO

Idaho Recent and Historical Digital Data Exchange Standard

Part of the Imagery Theme

Version 1
Effective Month Day, 2023

Developed by the Imagery Technical Working Group

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CONTENTS

1. **Introduction to the Recent and Historical Imagery Data Exchange Standard**

A statewide, comprehensive, recent and historical, digital georeferenced imagery layer is a critical source of information for agriculture and precision farming; taxing entities; river and stream resource management; wildlife and habitat management; land, rangeland, and forest resources management; natural resources conservation; infrastructure and construction management; geologic resource assessment and hazard mitigation; flood risk management; water supply; scholarly research and analysis; homeland security; public safety and disaster response; business, community, and economic development needs; wildfire management, planning, and response; urban and regional planning; and recreation and more. Many private sector and local, state, and federal government agencies have business needs for digital georeferenced recent and historical aerial imagery. The University of Idaho Library is meeting these needs by providing a comprehensive web service for publicly accessible digital georeferenced imagery collections for Idaho.

The Recent and Historical Imagery Standard is intended to facilitate the integration and sharing of current and historical imagery as well as to enhance the dissemination and use of other Idaho Framework datasets. This standard does not instruct how imagery is collected or designed for internal use.

This standard was developed by the Imagery Technical Working Group (TWG), a subgroup of the Idaho Geospatial Council – Executive Committee (IGC-EC). This standard will be reviewed on an annual basis and updated as needed.

1.1. **Mission and Goals of the Standard**

The Recent and Historical Digital Imagery Standard supports a statewide comprehensive, recent, and historical, imagery dataset that is consistent with applicable state and national standards. It establishes the minimum attributes and geospatial database schema for the Imagery Framework. The Standard will communicate with, and may have similar attributes to, other Idaho Framework data standards. It encourages all Idaho-based agencies with geospatial imagery data to contribute to Recent and Historical Digital Imagery Framework.

The layer will be appropriately shared and beneficial to all. The attributes will be general enough to incorporate basic information without requiring major changes in internal data models. This standard allows for expansion to a more complex data structure and schema.

1.2. Relationship to Existing Standards

This Recent and Historical Digital Imagery Standard relates to existing standards as follows: Idaho Digital Orthoimagery and Data Exchange Standard for the National Agriculture Imagery Program (NAIP) Layer. The NAIP layer is included in this data set and the attributes for both layers served by the University of Idaho is identical.

1.3. Description of the Standard

This standard describes the vision and geospatial data structure of a Recent and Historical Digital Imagery Framework in the State of Idaho. This standard is devised to be:
- Simple, easy to understand, and logical
- Uniformly applicable, whenever possible
- Flexible and capable of accommodating future expansions
- Dynamic in terms of continuous review

1.4. Applicability and Intended Uses

This standard applies to recent and historical digital imagery of the Imagery theme of The Idaho Map (TIM). This layer displays the most recent imagery by default. However, the layer contains numerous imagery collections for any given area. Therefore, users can display historical images if desired.

When implemented this standard will enable access and exchange of the data. A predictable standard will support and improve data collaboration, help identify and report errors in imagery georectification and/or imagery metadata, and allow agencies to incorporate this data into their own data products.

This standard does not consider data sharing agreements, contracts, transactions, privacy concerns, or any other issues relating to the acquisition and dissemination of imagery data.

1.5. Standard Development Process

The Imagery Technical Working Group is a voluntary group of private, city, county, tribal, state, and federal representatives. In 2022 the Imagery Lead began developing the standard. This standard was then reviewed and edited by the members of the Imagery Technical Working Group.

After initial development, the draft standard document was shared with the IGC-EC and IGC in accordance with the review and approval process described in ITA Policy P5030 - Framework Standards Development.

1.6. Maintenance of the Standard

This standard will be revised on an annual basis and in accordance with ITA Policy P5030 - Framework Standards Development

2. Body of the Standard

2.1. Scope and Content

The scope of the Recent and Historical Digital Imagery Standard is to describe a comprehensive recent and historical digital georeferenced imagery layer. The overhead, vertical images are acquired from an aircraft or other airborne platforms and represent surface conditions at the time the image was acquired. The collections in this layer may be either orthorectified or georectified.

Users should be aware that temporal changes may have occurred since the time the data were collected and that some parts of these data may no longer represent actual surface conditions. Note that the acquisition date is included in the attribute table. Users should not use these data for critical applications without a full awareness of the limitations of these data.

2.2. Need

A statewide comprehensive, recent and historical, digital georeferenced imagery layer is a critical source of information for agriculture and precision farming; taxing entities; river and stream resource management; wildlife and habitat management; land, rangeland, and forest resources management; natural resources conservation; infrastructure and construction management; geologic resource assessment and hazard mitigation; flood risk management; water supply; scholarly research and analysis; homeland security; public safety and disaster response; business, community, and economic development needs; wildfire management, planning, and response; urban and regional planning; and recreation and more. Many private sector and local, state, and federal government agencies have business needs for digital georeferenced current and historical aerial imagery. The University of Idaho Library is meeting these needs by providing a comprehensive web service for publicly accessible digital georeferenced imagery collections for Idaho.

2.3. Participation in the Standard Development

The development of the Recent and Historical Digital Imagery Standard adheres to ITA Policy P5030 - Framework Standards Development. The Imagery Standard Team tasked with developing this standard invited input and comments from private, county, state, and federal organizations through participation in Imagery Technical Working Group meetings. As the standard is reviewed in accordance with ITA Policy P5030 - Framework Standards Development requirements, there has been opportunity for broad participation and input by stakeholders in the development of this standard. The process will be equally broad for input on updates and enhancements to the standard. As with all Idaho Framework standards, public review and comments on the standard is encouraged.

2.4. Integration with Other Standards

The Recent and Historical Digital Imagery Standard follows the same format as other Idaho geospatial framework data standards. The standard may contain some of the same attributes as other framework standards and may adopt the field name, definition, and domain from the other standards to promote consistency.

2.5. Technical and Operation Context

2.5.1. Data Environment

The data environment is a digital raster with a specific, standardized set of attributes. Imagery data shared under this standard must be in a format supporting rasters.

2.5.2. Reference Systems

The layer is published in the WGS 1984 Web Mercator coordinate system (WKID 3857). Data are not required to be submitted in this coordinate system but must have a defined coordinate system with Well Known ID (WKID) clearly described in the metadata.

2.5.3. Global Positioning Systems (GPS)

Some data provided may contain geometry from GPS methods, and the provided metadata should describe this, if applicable.

2.5.4. **Interdependence of Themes**

Attributes found in the layer are identical to attributes found in the "Idaho Digital Orthoimagery and Data Exchange Standard for the National Agriculture Imagery Program (NAIP) Layer" published by the University of Idaho.

2.5.5. **Encoding**

When data are imported into, and exported from, the layer, encoding will take place to convert data formats and attributes.

2.5.6. **Resolution**

No specific requirements for resolution are specified in this standard. Resolution will be documented in the metadata.

2.5.7. **Accuracy**

The ground sample distance (GSD), horizontal accuracy, and tonal quality varies by Collection Name in the layer. Consult the metadata for a given collection to determine the accuracy.

2.5.8. **Edge Matching**

No edge matching takes place.

2.5.9. **Unique Identifier**

The DatasetID is the unique identifier for each data collection or data acquisition

2.5.10. **Attributes**

Attributes are described in Section 3 of this standard.

2.5.11. Stewardship

Perpetual maintenance and other aspects of lifecycle management are carried out by INSIDE Idaho.

2.5.12. Records Management and Archiving

Imagery is served as an Esri Imagery GeoService as well as using Open Geospatial Consortium (OGC) standards through INSIDE Idaho's Geospatial Data Clearinghouse (INSIDE) housed at the University of Idaho. INSIDE provides access and download capability. Data are housed on infrastructure managed by Research Computing and Data Services (RCDS) at the University of Idaho.

2.5.13. Metadata

The metadata describes the methods attributes associated with individual collections in the layer. Metadata conforms to the metadata standards as set out in ITA Standard S4220 – Geospatial Metadata

3. Data Characteristics

3.1. Minimum Graphic Data Elements

The geometry of the features in the layer is raster.

3.2. Optional Graphic Data Elements

Not applicable.

3.3. **Standard Attribute Schema**

Field Name	Data Type	Length	Description	Examples
OBJECTID	ObjectID		Object ID	1
Shape	Geometry		Shape	Polygon
Name	Text	200	File name of source image.	m_4111101_ne_12_060_20210621
Category	Integer		Image record category.	1-Primary. *See [1]) for complete list of coded values*
AcqYearFirst	Integer		Acquisition Year First	2021
AcqYearLast	Integer		Acquisition Year Last	2021
Resolution	Integer		Resolution (cm)	100
ProDef	Integer		Image Type	2-Natural Color. *See[2]) for complete list of coded values*
DatasetID	Integer		Collection Name	Idaho 2004. Complete list expands as collections are added.
Rectification	Integer		Rectification	1-Orthorectified. *See 3[1]) for complete list of coded values*
Constraints	Integer		Constraints	1-Public. *See [4]) for complete list of coded values*
Source	Integer		Authoritative source	1-USDA-FSA-APFO *See [5]) for complete list of coded values*
AcqDateFirst	Date		Acquisition Date First	10/12/2021
AcqDateLast	Date		Acquisition Date Last	10/12/2021
DownloadURL	Text	256	HTTP Download URL	https://www.northwestknowledge.net/data/download.php?uuid=36022c86-8d03-45ec-a430-3bd9dc69d3eb/8cab7323-08f7-4b86-a755-530d9e626e2b

[1]) *Coded Values: 0-Unknown, 1-Primary, 2-Overview, 3-Unprocessed Overview, 4-Partial Overview, 5-Inactive, 253-Uploaded, 254-Incomplete, 255-Custom*

[2]) *Image Type: 0-Unknown, 1-Black & White, 2-Natural Color, 3-Natural Color + Infrared, 4-Color Infrared*

[3]) *Rectification: 0-Unknown, 1-Orthorectified, 2-Georectified*

[4]) *Constraints: 1-Public, 2-Restricted*

[5]) *Source: 0-Unknown, 1-USDA-FSA-APFO, 2-U.S. Geological Survey, 3- Idaho Department of Water Resources, 4-Nez Perce County, 5-Idaho EPSCoR Office, 6-Facilities Services U of I, 7-Kimberly Research and Extension Center, 8-City of Moscow, 9-Idaho Transportation Department, 10-Library U of I, 11-City of McCall, 12-State of Idaho, 13-Teton County*

3.4. **Data Quality**

There are no restrictions on rectification, ground sampling distance, horizontal positional accuracy, tonal balance, cloud cover or other characteristics of source imagery.

Appendix A: References

Idaho Technology Authority (ITA). *Information and Data Policy P5000, Category: P5030 Framework Standards Development Policy.* https://ita.idaho.gov/psg/p5030.pdf

Idaho Technology Authority (ITA). *Enterprise Standards S4000 Geographic Information Systems (GIS) Data, Category: S4220 Geospatial Metadata.* https://ita.idaho.gov/psg/s4220.pdf

Appendix B: Glossary

See ITA Guideline G105 (ITA Glossary of Terms) for definition