Understanding and Using Metadata in ArcGIS

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Interoperability Teams
R&D Open Data

Interoperability Team
Understanding and Using Metadata in ArcGIS

- Introduction
- Metadata fundamentals
- ArcGIS platform
- Road ahead
Modern Software Needs and Requirements

Portability          Interchangeability          Extensibility

Interoperability    Standards Compliance

Componentization ...

Open Systems
Esri's Open Vision

ArcGIS is an open, flexible, and interoperable platform that supports innovation.

Our vision explained by Jack ➤

http://www.esri.com/software/open
Open systems encourage innovation, support interoperability, promote transparency, improve reliability and increase collaboration.
ArcGIS is Open Out of the Box

Open Architecture

- REST APIs
- Open Specifications
- COTS-to-COTS Enterprise Integrations

Open Standards

- ISO 19115
- OGC WFS
- OGC WMS

Open Source

- 500+ Github Projects
- App Templates
- Open Data

ArcGIS
Esri drives new standards and methods…
To solve customer problems

Creating new de facto GIS standards

Industry

Government

i3s
...and supports community standards
To enable interoperability and align with best practices
Standards creation process

- Industry
- Technology
- Government
- SDOs
ESRI supports standards through active participation

Organizations
- ISO TC 211
- OGC
- ANSI/INCITS –L1
- CEN
- Global Map
- GSDI
- DGIWG
- IHO
- GWG

Implementations
- IT/industry standards
- GIS standards

Projects/Testbeds
- OGC Web Services testbeds
- GEOSS
- INSPIRE
- NATO Core GIS

Standards Development
- International Standards
- Regional Standards
- National Standards
- Information Community Standards
Early advocate for "metadata" (data documentation/properties/digital marginalia)

Before "metadata" term

FGDC CSDGM

ISO 19115:2003

ISO 19139:2007

ISO Metadata revision ISO 19115-1

Participate in development and prepare for support.

Full implementation of profiles

Create ISO-compliant XML

Lead and participate in 19139 development

Early support for Draft ISO 19115

Participate in ISO 19115 development

Full CSDGM support in ArcCatalog

Participate in CSDGM development
Modern Software Needs and Requirements

Metadata

Discoverability

Accountability

Componentization...
Metadata Fundamentals

- Metadata documents geospatial content
  - for search, discovery, evaluation, archiving
- ArcGIS platform should facilitate these efforts
- Goal: improve the experience
Metadata in ArcGIS

• All items have metadata
• Metadata in ArcGIS is stored in ArcGIS XML
• Metadata styles determine how you display, edit, validate, export metadata
Metadata Styles

- FGDC *CSDGM* Metadata
  - Content Standard for Digital Geospatial Metadata (CSDGM)
- ISO 19139 Metadata Implementation Specification
- North American Profile of ISO 19115:2003 (NAP)
- INSPIRE Metadata Directive
Metadata Lifecycle

Author
Serve
Portal
Discover
Use
ArcGIS Platform

Import

Standard formats

Stored as ArcGIS XML

Export

Standard formats
## Metadata Support in ArcGIS for Desktop

<table>
<thead>
<tr>
<th>Feature</th>
<th>ArcMap 10.x</th>
<th>PRO 2.0</th>
<th>PRO 2.1</th>
<th>PRO 2.2</th>
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</thead>
<tbody>
<tr>
<td>Metadata styles for geospatial metadata standards</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Display and edit full metadata</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Map layers have metadata</td>
<td>No (limited)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Import and export metadata</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Manage metadata programmatically</td>
<td>Yes</td>
<td>Yes (limited)</td>
<td>Yes (improved)</td>
<td>Yes</td>
</tr>
<tr>
<td>Manage metadata with geoprocessing tools</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Publish map with full metadata</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Customize the metadata editor</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes (soon)</td>
</tr>
<tr>
<td>ISO 19115-1/-2/-3</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Metadata Support in ArcGIS Pro

- Metadata styles for geospatial metadata standards
- Display and edit full metadata
- Metadata for map layers
- Import and export metadata
- Save and filter content to files
- Copy ArcGIS metadata
- Upgrade CSDGM metadata
Metadata Support in ArcGIS Online and ArcGIS Enterprise

- Metadata styles for geospatial metadata standards
- Display and edit full metadata
- Scores quality of content
- Metadata for item layers
- Export metadata
- Copy ArcGIS metadata
- Save content to file
Metadata Support in ArcGIS for Open Data

- Leverage existing metadata for public items
- Display and edit full metadata
- Scores quality of metadata content
- Search metadata
- Export metadata
- Leverage metadata for additional access options
Flow of Metadata Publishing to ArcGIS Online

- Create metadata for data
- Add data to an ArcGIS Pro map
  - Layer reference’s data’s metadata
- Publish map to ArcGIS Online as a hosted feature layer
  - Data with metadata is copied
- Individual layers in the feature layer reference the copied data’s metadata
- Update metadata locally, overwrite item to make updates available online
Flow of Metadata Publishing to ArcGIS Enterprise

- Create metadata for data in registered enterprise geodatabase
- Add data to an ArcGIS Pro map
  - Layer reference’s data’s metadata
- Publish map to ArcGIS Enterprise as a feature layer
  - Data with metadata is referenced
- Individual layers in the feature layer reference the data’s metadata
- Update metadata in the enterprise geodatabase, immediately available online
Update metadata in referenced database

Aleta Vienneau
Road Ahead – Near Term

- Publish ArcGIS Pro Metadata Toolkit
- Support importing and exporting ISO Metadata 19115-1/-2/-3
- Import standard metadata in ArcGIS Online and ArcGIS Enterprise
Road Ahead – Mid Term

• Support scripting metadata workflows in Pro
• Leverage organizational metadata settings in Pro
• Metadata editor usability improvements
• Enhance the ArcGIS metadata editor to support ISO 19115-1/-2/-3
Road Ahead – Long Term

• Common metadata editing experience for the ArcGIS platform
• Controlled vocabularies
Metadata in the ArcGIS Platform

• Improve metadata support throughout the platform
• Create metadata that complies with standards

• Goals
  • Improve flow of metadata through the platform
  • Make it easier to produce high quality metadata content
## See Us Here

<table>
<thead>
<tr>
<th>WORKSHOP</th>
<th>LOCATION</th>
<th>TIME FRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArcGIS for INSPIRE</td>
<td>Spotlight</td>
<td>Tuesday 10:00AM</td>
</tr>
<tr>
<td>ArcGIS for INSPIRE</td>
<td>Demo Theater</td>
<td>Tuesday 11:15AM</td>
</tr>
<tr>
<td>Geoportal server</td>
<td>Technical Workshop</td>
<td>Tuesday 2:30PM</td>
</tr>
<tr>
<td>Geoportal Server</td>
<td>Spotlight Theater</td>
<td>Wednesday 10:30AM</td>
</tr>
<tr>
<td>Metadata</td>
<td>Spotlight Theater</td>
<td>Wednesday 11:15AM</td>
</tr>
<tr>
<td>Metadata</td>
<td>Special Interest Group</td>
<td>Wednesday 5:30PM</td>
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<tr>
<td>Metadata</td>
<td>Spotlight Theater</td>
<td>Thursday 10:30AM</td>
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<tr>
<td>Metadata</td>
<td><strong>Technical Workshop</strong></td>
<td><strong>Thursday 1:00PM</strong></td>
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<tr>
<td>OGC Services</td>
<td>Technical Workshop</td>
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<tr>
<td>Interoperability</td>
<td>Spotlight Theater</td>
<td>Wednesday 12:15PM</td>
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<tr>
<td>interoplarity</td>
<td>Technical Workshop</td>
<td>Wednesday 1:00PM</td>
</tr>
<tr>
<td></td>
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- User interface designed for easy navigation and feedback submission.