Making the Most of Metadata Catalogs and Services
An Introduction

Federal Geographic Data Committee’s (FGDC) Cooperative Agreements Program (CAP)
March 31, 2010
Why is this training being hosted?

- 2009 FGDC-sponsored CAP grant (category 2)
  - Extending Geospatial One-Stop (GOS) resources

- Core Partners:
  - Innovate!, Inc.
  - Environmental Protection Agency (EPA)
  - Couer D’Alene Tribe (CDA)
  - North Carolina Department of Environment and Natural Resources (NCDENR)

- Created software that extends GOS services to include new partners and features
  - GeoFinder for the Environment (GFE)
  - Built on a pilot effort that began with EPA

- **Key goal:** expand use of GOS (and GFE) services and meet user needs more effectively
Agenda

• What will we cover?
  - Getting started
    • Basic concepts
  - GOS catalog interfaces
    • What is available?
    • How do you use it?
  - GFE capabilities
    • What is the GFE?
    • Accessing the GFE
    • GFE partner implementations
    • How can you leverage the GFE?
  - Basic steps for getting started in your organization
  - Additional tools that may help
  - Questions
Getting Started

• **Basic Concepts**

  – **Geospatial Metadata Catalogs**
    • In use for many years
    • Collect, store, organize metadata documents in a central location
    • Often accessed through web-based front end search interfaces

  – **Application Programming Interfaces (APIs)**
    • Developed to make metadata contents available to programmers outside of the catalog portal or website
    • Users can develop search interfaces (or simple links) from their applications leverage the content of the catalog
    • Greatly expands the utility of a metadata catalog
    • Two Common Implementations:
      – Catalog Service for the Web (CS-W)
      – Representational State Transfer (REST)
GOS Catalog Interfaces

• **What is available?**
  – CS-W
  – **REST**
  – Z39.50
  – Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)

• **GOS REST Basics**
  – Simple, URL-based API
  – GeoRSS, HTML, and KML outputs
  – Access a metadata document directly (using unique identifier)
  – Access search interface to perform targeted searches

• **How does one access the GOS REST interface?**
  – GOS Targeted Document Query:
    • http://catalog.geodata.gov/geoportal/rest/document/{UUID}
  
  – GOS Search Query:
    • Base URL: http://catalog.geodata.gov/geoportal/rest/find/document
    • Default returns 10 most recently published documents
    • Default returns GeoRSS format
GOS Catalog Interfaces (cont’d)

• Some Common GOS Search Query Parameters*:

  – searchText (specify keyword search)
    • \url{http://catalog.geodata.gov/geoportal/rest/find/document?searchText=Superfund}

  – f (specify the output format – GeoRSS, HTML, KML)
    • \url{http://catalog.geodata.gov/geoportal/rest/find/document?searchText=Superfund&f=html}
    • \url{http://catalog.geodata.gov/geoportal/rest/find/document?searchText=Superfund&f=kml}

  – contentType (specify the content type that you’re interested in)
    • \url{http://catalog.geodata.gov/geoportal/rest/find/document?searchText=Superfund&f=html&contentType=downloadableData}

  – max (specify the maximum number of records to return)
    • \url{http://catalog.geodata.gov/geoportal/rest/find/document?searchText=Superfund&f=html&contentType=downloadableData&max=100}

  – style (specify a stylesheet to apply to results [html output only])
    • \url{http://catalog.geodata.gov/geoportal/rest/find/document?searchText=Superfund&f=html&contentType=downloadableData&max=100&style=http://geonetsystems.com/share/de mo.css}

  Please Note: this is not a full list of GOS REST parameters, but a subset of what we felt were the most useful and/or common. For more details, please visit \url{http://geodata.gov}
GFE Capabilities

• **What is the GFE?**
  - Metadata search and discovery tool
    - Federated search model
    - Supports connections to multiple types of catalog implementations
    - Easy to plug into new partner catalogs
  
  - Key features
    - Web based front end
    - Simple, URL-based API

  - Operates similar to GOS, with additional features
    - Extends the basic capabilities of GOS
    - Targeted catalog search (GOS, States, others)
    - Additional capabilities to customize output
GFE Capabilities

*Note: not all capabilities currently being used
GFE Capabilities

- **Accessing the GFE:**
    - Can be used as a basic search and discovery interface
    - Can also be used as a test environment for constructing API URLs
  - API Base URL: [http://dev.innovateteam.com/GFE/search/get?](http://dev.innovateteam.com/GFE/search/get?)
  - API Parameters:
    - **SearchServices** (target specific catalog provider)
      - Michigan GIS = MI_GIS
      - MN Land Management = MN_LMIC
      - MN Dept of Natural Resources = MN_DNR
      - MN Metro GIS MN_MGIS
      - Geospatial One Stop = GOS2
      - GEOSS = GEOSS
      - GMU One Geology = GMUOneGeology

- **Keywords** (specify the keywords you’re looking for)

- **f** (output format: kml, georss, html, html_static)
  - [http://dev.innovateteam.com/GFE/search/get?SearchServices=GOS2&Keywords=water&f=html](http://dev.innovateteam.com/GFE/search/get?SearchServices=GOS2&Keywords=water&f=html)
GFE Capabilities

- **GFE API Parameters (cont’d)**
  - **KeywordType** (all, any, phrase)
    - http://dev.innovateteam.com/GFE/search/get?SearchServices=GOS2&Keywords=water+wells&KeywordType=all&f=html
  - **Westbc, Eastbc, Southbc, Northbc** (bounding box)
    - Values must be between the ranges of -180 to 180 and -90 to 90, respectively
    - http://dev.innovateteam.com/GFE/search/get?SearchServices=GOS2&Keywords=water&KeywordType=phrase&northbc=45.01111&westbc=-79.76347&southbc=17.402023&eastbc=-64.232347&f=html
  - **source** (filters GOS2 sources based on numeric code provided by GOS)
    - http://dev.innovateteam.com/GFE/search/get?SearchServices=GOS2&Keywords=water&f=html&source=3667
  - **css** (specify your own stylesheet)
  - **xslt** (specify your own xslt to identify elements to include in output records)
    - http://dev.innovateteam.com/GFE/search/get?SearchServices=GOS2&Keywords=superfund&KeywordType=all&f=html&source=10787&xsl=http://geonetsystems.com/share/htmlJZ.xsl
GFE Capabilities

- **Additional Examples**
  - CDA Tribe GeoRSS output displayed in Google Maps:
    [http://maps.google.com/maps?f=q&source=s_q&hl=en&q=http%3A%2F%2Fdev.innovateteam.com%3A8080%2FGFE%2Fsearch%2Fget%3FSearchServices%3DGOS2%26Keywords%3DCDA%26KeywordType%3Dall%26f%3Dgeorss%26source%3D3667](http://maps.google.com/maps?f=q&source=s_q&hl=en&q=http%3A%2F%2Fdev.innovateteam.com%3A8080%2FGFE%2Fsearch%2Fget%3FSearchServices%3DGOS2%26Keywords%3DCDA%26KeywordType%3Dall%26f%3Dgeorss%26source%3D3667)
GFE Partner Implementations

- EPA: Integrated GFE capabilities into EPA Earth Application
GFE Partner Implementations

- CDA: Integrated GFE capabilities directly into their main GIS Data Home Page
How Can You Leverage the GFE?

• Basic Options:
  – Add your catalog to the list of GFE sources (if available) and make use of the API to display your resources
  – Harvest metadata to GOS and reuse content from there (using GFE API or GOS API, or both)
  – Create a list of targeted links from your web pages/applications that can help guide users to your (or others’) content that is useful for your business needs
    • No programming needed
    • Reuses GFE resources rather than standing up your own
  – Embed results into an iframe in your webpage
    • Dynamically generate content in your own web page
  – Create a simple search interface that can allow users to search for data from your own web applications
    • No need to buy your own software
    • Use the API capabilities from your web applications to expand users’ ability to find and access resources
Basic Steps for Getting Started in Your Organization

- Start with metadata
  - Ensure that it is well-documented and conformant
  - Review linkage to resources

- Determine the best catalog implementation for your needs
  - Simple, lightweight catalog
  - More robust enterprise implementation

- Decide how you want to distribute your information
  - General public
  - Internal only
  - With Trusted Partners

- Connect your catalog or metadata to GOS or GFE

- Develop your queries and outputs
Additional Tools That May Help

• Metadata Editing
  – EPA Metadata Editor
    • Streamlined user interface
    • Flexible design
    • Freely available
    • [http://www.epa.gov/geospatial/eme.html](http://www.epa.gov/geospatial/eme.html)
  – FGDC Metadata Training Resources
    • [http://www.fgdc.gov/metadata](http://www.fgdc.gov/metadata)
  – Innovate Training Materials from 2008 Grant

• Metadata Management
  – Innovate/EPA SDE2WAF (WAFer) application
    • Harvest directly from your SDE database
    • Configure a view to control which records are harvested
    • Other configuration options available
Any Questions?

• Thank you for your time today
More Information

- **People:**
  - Innovate!, Inc.:
    - Jessica Zichichi: jzichichi@innovateteam.com
  - FGDC Lead:
    - Doug Nebert: ddnebert@fgdc.gov

- **Places:**
  - GFE website: http://dev.innovateteam.com/GFE/
  - GOS website: http://geodata.gov
  - CDA data access website: http://gis.cdatribe-nsn.gov/SearchGISData.aspx
  - FGDC website: http://www.fgdv.gov
  - Innovate website: http://innovateteam.com