Everything Your Mother Never Told You About Metadata

Thursday, August 10 Atlanta, GA

Metadata Panel

Moderator:

- Thomas Talbot, MSPH, New York State Department of Health
- Panel Members:
 - -Robert Levey, M.B.A, NYC Department of Health & Mental Hygiene
 - -Lisa Parker, M.S., State of Maine Center for Disease Control and Prevention
 - -Rodney Garland, M.S., Oregon Department of Human Services Environmental and Occupational Epidemiology

What is Metadata?

Metadata is "Data About Data". They help a person to locate and understand data by describing the content, quality, condition, and other characteristics of the data.

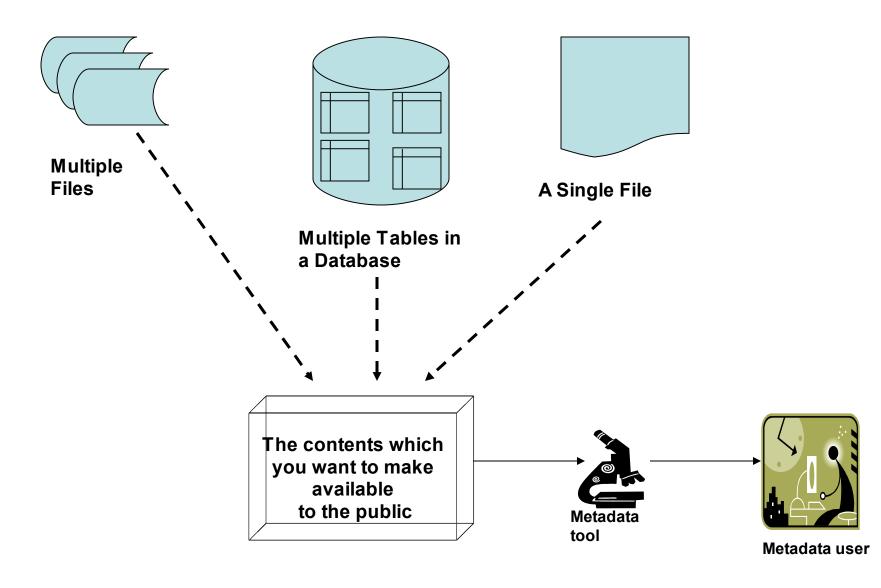
The word Metadata can be confusing



Metadata tags for XML namespaces

Database modelers use the term to describe specialized logical data models

Another confusing term is Data Set



Commonly Used Metadata Standards

- Federal Geographic Data Committee (FGDC) Content Standards for Digital Spatial Metadata
- Dublin Core
- ISO 11179
- ISO 19115
- ISO 19139 (currently undergoing review)



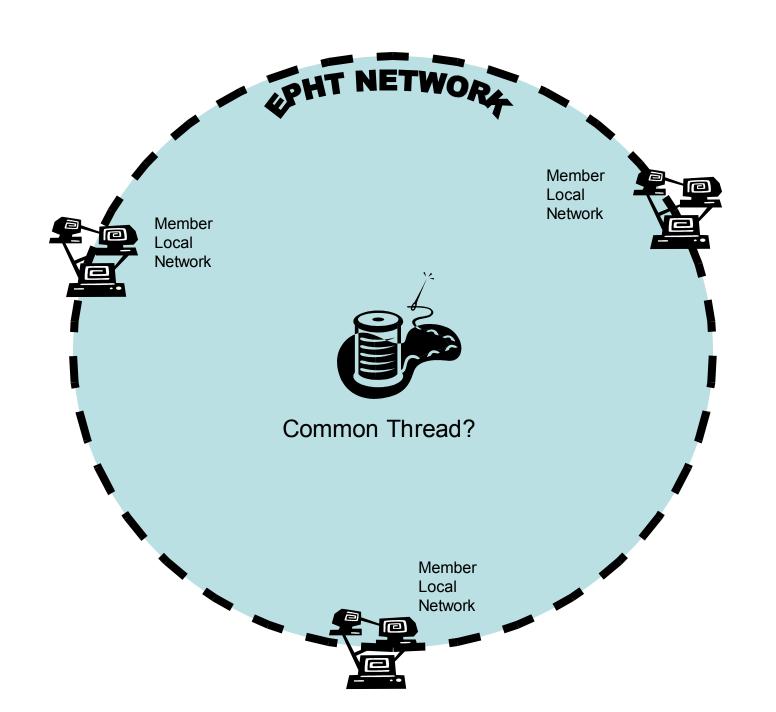


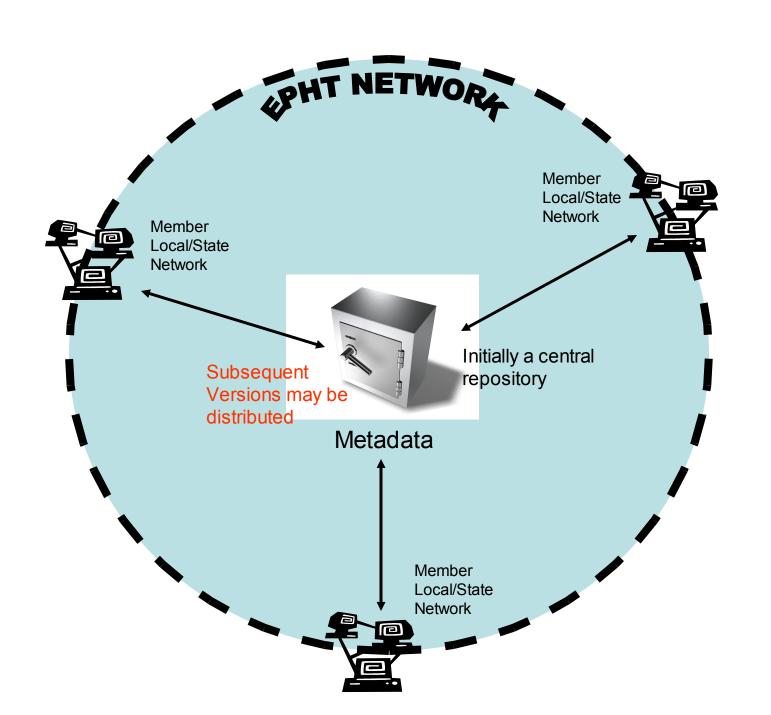


Why is Metadata Important?

- Protects investment in data
- Helps users to understand data
- Allows for users to discover the existence of data
- Limits liability
- Can reduce staff workload (once created)

HOW DOES IT WORK?





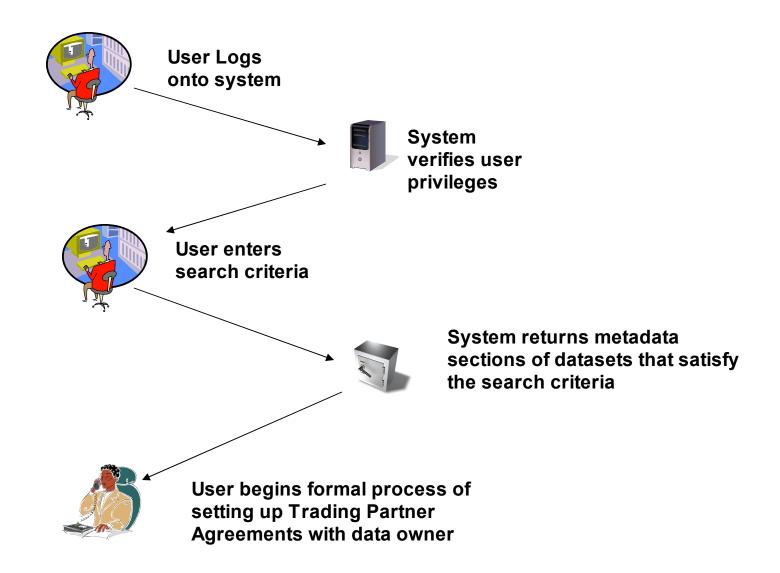
Metadata is the primary portal that members use to locate data they want access to or to advertise the data they want to make available to the other network members.

Metadata describes the contents of each member data set. It describes items such as:

- Content
- Location Reference
- Use Constraints
- How to gain access
- Data Quality

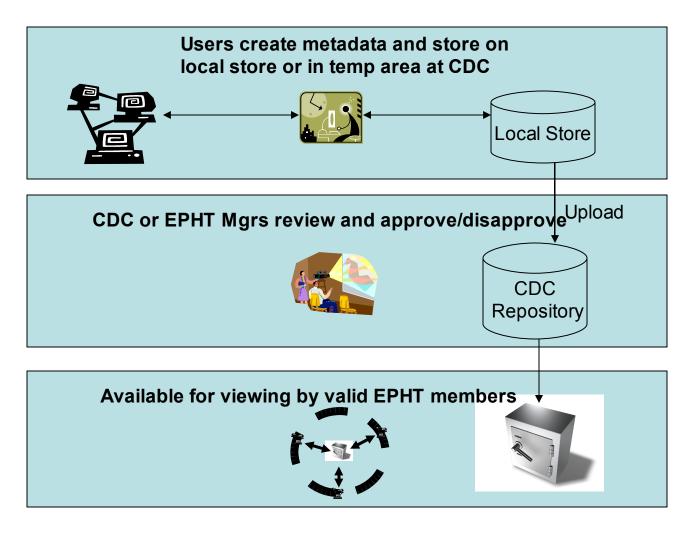
In addition to its descriptive power, Metadata is also searchable.

Typical Metadata User Session



Where will the Vault Reside and how do we get metadata into it?

XML is the export/import language of metadata data exchange. We create the data in a local tool using ESRI, Intergraph, freeware products such as TKME.



What's Under the Hood? FGDC Standard Lists 10 sections

- 1. Identification Information
- 2. Data Quality Information
- 3. Spatial Data Organization Information
- 4. Spatial Reference Information
- 5. Entity and Attribute Information
- 6. Distribution Information
- 7. Metadata Reference Information
- 8. Citation Information
- 9. Time Period Information
- 10.Contact Information

(http://geology.usgs.gov/tools/metadata)

Identification Information:

Browse Graphic:

Browse Graphic File Name: http://datawarehouse.hrsa.gov/images/HGDW_BrowseGraphic.jpg

Browse Graphic File Description: HRSA Geospatial Data Warehouse

Browse Graphic File Type: JPG

Citation:

Citation Information:

Title: HRSA Geospatial Data Warehouse

Online Linkage: http://datawarehouse.hrsa.gov/

Originator: HRSA Call Center *Publication Date:* 20040301

Publication Information:

Publication Place: Rockville, MD

Publisher: Health Resources and Services Administration

Geospatial Data Presentation Form: Website

Edition: 3.4 **Description:**

Abstract: The HRSA Geospatial Data Warehouse and its associated applications provide HRSA with access to a broad range of information about HRSA programs, related health resources, and demographic data useful for planning and policy purposes. A data warehouse is a centralized store of an organization's data resources implemented specifically for query, reporting, and analysis purposes.

Purpose: The HRSA Geospatial Data Warehouse captures grants, scholarship and loan programs, designation of underserved areas, and service demonstration programs and integrates these with data acquired from external sources.

Keywords:

Theme:

Theme Keyword: health

Theme:

Theme Keyword: Health

Theme Keyword: Primary Care Service Areas

Theme Keyword: Ryan White Care Act Providers of Ambulatory/Outpatient Medical Care

Theme Keyword: HRSA Investments in Women's Health

Place:

Place Keyword: Republic of Palau

Place Keyword: Federated States of Micronesia

Point of Contact:

Contact Information:

Contact Person Primary:

Contact Person: Call Center

Contact Organization: HRSA Call Center

Contact Address:

Address Type: Mailing and Physical

Address: 12530 Parklawn Drive Suite 350

City: Rockville

State or Province: MD

Postal Code: 20850

Country: USA

Contact Electronic Mail Address: CallCenter@hrsa.gov

Contact Voice Telephone: 1-877-464-4772

Contact Facsimile Telephone: (301) 998-7377

The SND Minimal Metadata Template

	Element	
1. Identification	7. Metadata Reference	
Citation	Metadata Date	
Originator	Metadata Contact	
Publication Date	Metadata Standard Name	
Title	Metadata Access Constraints	
URL	Metadata Use Constraints	
Description	9. Time Period Information	
Abstract	Single Date	
Purpose	Calendar Date	
Supplemental Info	Multiple Dates	
Time Period of Content	Range of Dates	
Currentness	Beginning Date	
Time Period Information	Ending Date	
Status	10. Contact Information	
Progress	Contact Information	
Maintenance and Update Frequency	Contact Organization	
Spatial Domain	Contact Position	
West Bounding Coordinate	Contact Address	
East Bounding Coordinate	Address Type	
North Bounding Coordinate	Address	
South Bounding Coordinate	City	
Keywords	State or Province	
Theme Keyword Thesaurus	Postal Code	
Theme Keyword	Country	
Place Keyword Thesaurus	Contact Telephone Number	
Place Keyword	Contact TDD/TTY Telephone	
Access Constraints	Contact Fax Number	
Use Constraints	Contact E-mail Address	
Point of Contact	Hours of Service	
Native Data Set Environment	Contact Instructions	
5. Entity and Attributes		
Entity and Attribute Overview	Subset of 357 FGDC elements	
Entity and Attribute Detail Citation	Subset of 337 GDC digitients	

Searching Metadata

	Field Name	Operator	Value
	abstract	contains	'lead levels'
AND	keyword	contains	'child cases'
AND	beginning date	>=	1/1/05
AND	ending date	<=	12/31/05

Results

Data Set Name	Owner
Leadquest	NYC DOHMH
State Childhood Lead database	Maine

Potential Search Criteria

Metadata FGDC Section	Searchable Field Name	Search Criteria
Entities and Attributes	attribute_lbl	CONTAINS
Entities and Attributes	attribute_def	CONTAINS
Identification	<pre>pub_dte datetime</pre>	>,<,=
Identification	title	CONTAINS
Identification	other_citation_dtl	
Identification	originator	CONTAINS
spatial Reference Info	datumn_nm	CONTAINS
spatial Reference Info	datumn_description	CONTAINS
Identification	e_bounding_coord	>,<,=
	w_bounding_coord	>,<,=
Identification		
Identification	n_bounding_coord	>,<,=
Identification	s_bounding_coord	>,<,=
Identification	purpose	>,<,=
Identification	use_constraint	>,<,=
Identification	Data_set_Credit	CONTAINS

Metadata FGDC Section	Searchable Field Name	Search Criteria
Identification	supplement_info	CONTAINS
Identification	Access_constraint	CONTAINS
Identification	abstract	CONTAINS
Identification	keywords	CONTAINS
Identification	metadata_name	CONTAINS
Identification	metadata_description	CONTAINS
Identification	meta_access_constraint	CONTAINS
Identification	meta_use_constraint	CONTAINS
Identification	place_keyword	CONTAINS
Identification	theme_keyword_name nvarchar	CONTAINS
Identification	theme_keyword_description	CONTAINS
Identification	currentness_ref	>,<,=
Identification	calendar_dte datetime	>,<,=
Identification	begin_dte datetime	>,<,=
Identification	end_dte datetime	>,<,=

Thesauri - Vocabularies

Examples:

LOINC – Logical Observation Identifiers Names and Codes

SNOMED – Standard Nomenclature of Medicine

ICD-9 (International Classification of Diseases)

ICD-10

MARC – Machine Readable Code sets from Library of Congress

ISO International Standards Organization

The SND Vocabulary subgroup is working on a way to traverse these vocabularies and possibly include them in our metadata search.

Trying out the template

- 2. Selected a dataset
- 3. Had the data owners apply the SND template
- 4. Report back to SND how it works

PHASE

PHASE Metadata Experience

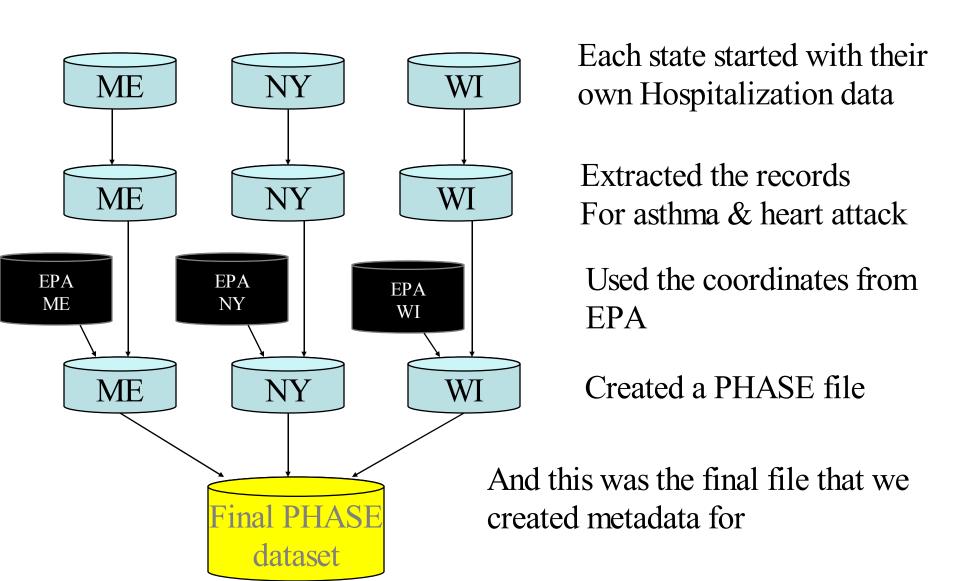
Presented by Lisa Parker

Contributions from the PHASE team:
Chris Paulu (ME),
Tom Talbot and Valerie Haley (NY),
Mark Werner and Marni Bekkedal (WI)

Presentation Format

- How we did it
 - What PHASE data was metadata'd
 - Who created the metadata
 - The metadata tool selected and why
 - Our process of creating and reviewing PHASE metadata
- What we thought
 - Feedback for SND

What PHASE data was metadata'd?



Who Created the Metadata?

- For the PHASE supplemental project, the three states divided responsibilities
- Maine was assigned the IT lead
- Metadata fell under IT
- I am the IT person from Maine and a member of the SND workgroup

The Metadata Entry Tool

- Requirements were that the tool be free and easy
- (USGS's) Tkme was selected, and blessed by Metadata Team
- Metadata team provided installation notes, getting started document and guidance (links on last page)

Creating and Reviewing the Metadata

- Found examples of metadata
- Used publicly available documentation
- Initially entered all (possible) FGDC fields
- Distributed for the team to review
- Made adjustments based on team comments and repeated
- And repeated
- And repeated

Feedback

- Feedback on the process
 - The tool, who should create metadata, how to efficiently review and agree on the metadata
- Feedback on the template
- Review of FGDC Sections
- Points of discussion on the FGDC sections / fields
- Wish list for the new metadata entry tool

Feedback on our Process

- We think / recommend...
 - Decide up-front who will actually create the metadata and what you want included. Consider creating a questionnaire, or interview for gathering metadata
 - Metadata entry is not necessarily a "technical" task
 - When multiple locations are involved, use conference calls to conduct the discussions
 - You may already have a metadata entry tool in house, like ArcCatalog. If not, Tkme worked for us (the price was right!)

Feedback on the Template

- We think ...
 - The word template implied it was a starting point for entry (and it was not)
 - The definitions need to be more meaningful
 - The fields that require entry need to be made obvious (versus a "compound" category type that does not allow entry)

FGDC Metadata - Sections

- 1. Identification
- 2. Data Quality
- 3. Spatial Data Organization
- 4. Spatial Reference
- 5. Entity and Attribute

- 6. Distribution
- 7. Metadata Reference
- 8. Citation
- 9. Time Period
- 10. Contact Information

Feedback - Section 1 — Identification

Basic information about the dataset, including status-contacts-keywords

- We think
 - There should be a specific place to say the kind of EPHT dataset this is: health, hazard, exposure
 - The "Bounding Coordinates" needs discussion (data is non-contiguous)
 - We need a better understanding on keywords and how a search tool will use these
 - There should be a place specifically for "multiple contributors"

Feedback - Section 2 – Data Quality

A general assessment about the quality of the dataset

- We think
 - a section on data quality is important
 - A better understanding of "positional accuracy" is needed. For non-GIS, multi-contributor data, (how) can this be used?
 - Is the "completeness report" the proper place for notes about non-contiguous data?

Feedback - Sections 3 & 4 Spatial

The mechanism used to represent the spatial information and a description of the reference frame for and means to encode coordinates

- We think
 - these sections pertain specifically to GIS generated data (which PHASE was not), but we also think that when coordinates exist (and they do in our data), there should be a required place to say where those coordinates were generated

Feedback - Section 5 – Entity and Attributes

Information about the content of the dataset

- We think
 - Could "entity" be the description for the kind of EPHT dataset? (health, hazard, exposure)
 - We wanted to use this section as a "data dictionary" and would recommend EPHT use

Feedback - Section 6 — Distribution

Information about the distributor and options for obtaining the data

- We think
 - EPHT data should be required to say whether the data can, or cannot, be obtained
 - We need to talk about how to handle a dataset, like PHASE, that cannot be distributed. Conceivably one could go to the data sources and obtain the data on their own. Where would we say this?
 - We liked having the ability to enter the size of the dataset, but that field is embedded in a distribution field (and our data is not distributable)

Feedback – on the new tool for metadata entry

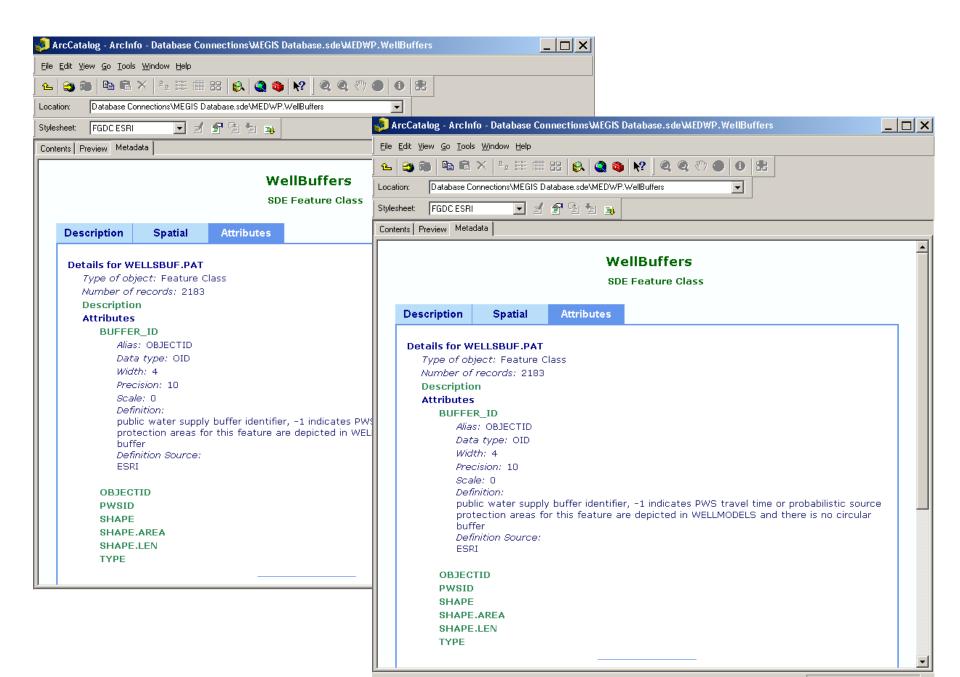
- We want
 - Easy-to-understand definitions
 - To know up-front what fields are used for searching
 - A tool that could "interview" the users to prompt for entry using examples and instructions
 - The output of the tool should be a clear and easily understood document (the next two slides show screen shots of a page of .txt metadata and a page from ArcCatalog)

```
Entity and Attribute Information:
 Detailed Description:
   Attribute:
     Attribute Label: STATE
     Attribute Definition:
       Char(2).
        The State of the hospital admission
     Attribute Definition Source: Hard Coded by State providing the data
     Attribute Domain Values:
        Enumerated Domain:
          Enumerated Domain Value: ME
         Enumerated Domain Value Definition: Maine
        Enumerated Domain:
          Enumerated Domain Value: NY
          Enumerated Domain Value Definition: New York
        Enumerated Domain:
          Enumerated Domain Value: WI
         Enumerated Domain Value Definition: Wisconsin
   Attribute:
     Attribute Label: ID PATIENT
     Attribute Definition:
       A value that attempts to uniquely identify a patient.
```

When combined with the State abbreviation, this will identify persons within a state. Singular identification may be approximate, depending on state/hospital coding policies (e.g., the ID may only be unique to patients within a hospital facility).

In NY, unique persons were identified using the first and last two digits of the personâ \in (tm)s last name, the first two characters of the first name, and the last four digits of the social security number. If the social security number was missing (i.e. for young children), the birthdate was used instead. The identifier was encrypted to maintain confidentiality

Attribute Definition Source: Assigned by each State



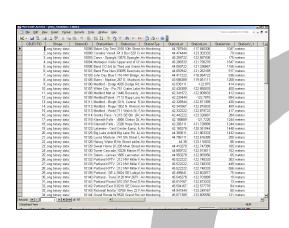
Summary

- We think ...
 - EPHTN could definitely benefit from consistent, reliable, informative metadata
 - A good metadata entry tool will be key to ensuring consistency
 - The repository and it's functionality must be identified prior to confirming the tool

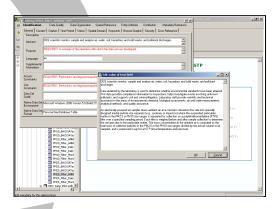
Websites that were helpful

- Here's a list of tools: http://www.nbii.gov/datainfo/tools/index.html
- Website to download Tkme: http://geology.usgs.gov/tools/metadata/
- This site will find example of metadata: http://mercury.ornl.gov/nbii/
- Content Standards for Digital Geospatial Metadata: http://geology.usgs.gov/tools/metadata/standard/metadata.html
- This is another way of presenting the FGDC Standard http://www.nbii.gov/datainfo/metadata/standards/BRD_metadata/version2/metay-2.html
- A "quick guide" to metadata: www.fgdc.gov/metadata/documents/MetadataQuickGuide.pdf

Proposed Next Steps for EPHT Metadata









- Reconvene the Metadata Subgroup
- Create a manual describing FGDC elements
- Oversee the development of a metadata creation tool
- Develop a metadata 101 training
- Develop a process for improving the template, tool, and message

Reconvene the Metadata Subgroup

We need you!



- Subgroup will need to work rapidly on some tasks.
- Address issues such as completeness and accuracy
- Will work closely with PMO and CWG

Create a Manual Describing EPHTN Elements

- Work with PMO to develop a more user-friendly manual. The manual should include:
 - Descriptions of EPHTN elements as they pertain to EPHT
 - Provides examples pertinent to EPHT of the types of information needed in an element
 - Gives examples of completed EPHTN standard metadata for data such as:
 - Cancer
 - Birth defects
 - Hospitalizations
 - Air pollution

Oversee the Development of a Metadata Creation Tool

- Metadata tool requirements document developed with grantee input in 2005.
 - Available at the EPHT workgroups website (http://www.ephtn.org/) in the SND document library for metadata.
- CDC will hire a contractor to create the tool
- Will need to outline a procedure to test and provide comments on functionality

Develop a Metadata 101 Training

- Investigate other trainings available
 - For example: USGS has "Train-the-Metadata-Trainer" materials and courses available (

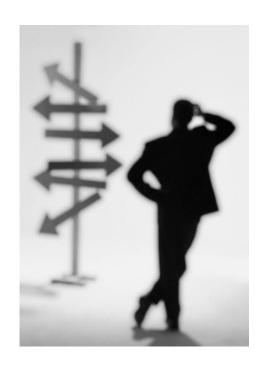
http://www.nbii.gov/datainfo/metadata/training/index.html

- Investigate coordinating with FGDC
- Determine type of training(s)
 - Self guided web-based or paper training?
- Determine who will lead development of training(s)
 - Metadata subgroup, CDC, contractor, other?

Develop a Process for Improving the Template, Tool, and Message

- PMO to improve communications and message development
- CWG to suggestion content/vocabulary requirements
 - E.G. questions on data quality
 - Possible standard terms/language
- Overall process to receive, review, and implement revisions to the template, tool, registry, and documents

Official Next Steps Will be Up to the Metadata Subgroup



Questions

Panel Discussion