

Metadata Matters

Westat

What is a Standard?

Webster's definition

- ▶ **“An acknowledged measure of comparison for quantitative or qualitative value; a criterion. Widely recognized as a model of authority or excellence.”**



What is a Standard?

- ▶ **Standards are documented agreements**
- ▶ **Contain technical specifications or other precise criteria**



What is a Standard?

- ▶ **Used consistently as rules, guidelines, or definitions of characteristics**
- ▶ **Ensure consistency in materials, products, processes and services**

What is a Standard?

- ▶ **Ensure that these are fit for their purposes**



The Importance of Standards

- ▶ **Ensure consistent and mutually understandable language**
- ▶ **Provides basis for effective collaboration**
- ▶ **Enables interoperability**

The Importance of Standards

With Spatial Data

- ▶ **Enable meaningful description, utilization and sharing of data**
- ▶ **Allow temporal consistency and comparability**
- ▶ **Provide consistent collection, accuracy and precision**

The Importance of Standards

With Spatial Data

- ▶ **Reduce redundancy of data**
- ▶ **Provide expectation of content**

The Reason for Standards

- ▶ **You need to understand these to be able to determine if data are suitable for specific applications**
- ▶ **This is particularly important if you are combining data from different sources**

Kinds of Standards

- ▶ **Official standards**

- ▶ Those that are established by broad agreement

- ▶ **De facto standards**

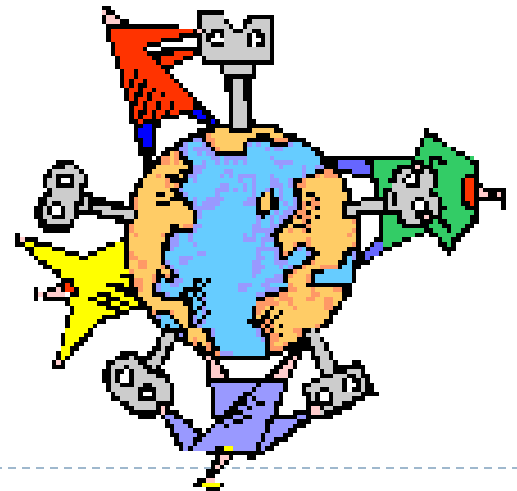
- ▶ Those that are established by broad implementation or use

Kinds of Standards

- ▶ **Types of **geospatial standards****
 - ▶ **Data content**
 - ▶ **Data classification**
 - ▶ **Data documentation**
 - ▶ **Data symbology or presentation**
 - ▶ **Data transfer**
 - ▶ **Data usability**

Who Creates Geospatial Standards?

- ▶ **Federal agencies**
- ▶ **Industry consortia**
- ▶ **International organizations**
- ▶ **Companies**



Federal Geographic Data Committee (FGDC)

- ▶ **Established in 1990**
- ▶ **Interagency committee**
- ▶ **19 cabinet level and independent agencies**



Members of FGDC

- ▶ **Dept. of Agriculture**
- ▶ **Dept. of Commerce**
- ▶ **Dept. of Defense**
- ▶ **Dept. of Energy**
- ▶ **Dept. of Health and Human Resources**
- ▶ **Dept. of Housing and Urban Development**
- ▶ **Dept. of Interior**
- ▶ **Dept. of Justice**
- ▶ **Dept. of State**
- ▶ **Dept. of Transportation**
- ▶ **Environmental Protection Agency**
- ▶ **Homeland Security**
- ▶ **General Services Agency**
- ▶ **Library of Congress**
- ▶ **National Archives and Rerecords Administration**
- ▶ **National Aeronautic and Space Administration**
- ▶ **Office of Management and Budget**
- ▶ **Tennessee Valley Authority**

Federal Geographic Data Committee (FGDC)

- ▶ **Promotes the coordinated use, sharing, and dissemination of geospatial data on a national basis**



Principle Roles of the FGDC

- ▶ **Promote development**
- ▶ **Maintain and manage**
- ▶ **Implement standards**
- ▶ **Develop technology**
- ▶ **Transfer and exchange**
- ▶ **Coordinate agencies**
- ▶ **Publish technical reports**

Standards Working Group

- ▶ **FGDC endorses 64 standards non-federally authored**
 - ▶ **ISO**
 - ▶ **OGC**
 - ▶ **ANSI**

FGDC

Standards Working Group

- ▶ **ISO 19115, NAP, ISO 19110, are standards endorsed by the FGDC**
- ▶ <http://www.fgdc.gov/standards/fgdc-endorsed-external-standards/index.html>

Significant Efforts of the FGDC

- ▶ **Coordination of geospatial data at the federal level**
- ▶ **Spatial Data Transfer Standard (STDS)**
- ▶ **Content Standard for Digital Geospatial Metadata**

Significant Efforts of the FGDC

- ▶ **Content standards for spatial data**
 - ▶ Specific data types
 - ▶ A variety of standards in development
- ▶ **National Spatial Data Infrastructure (NSDI)**

NSDI Grand Scheme

- ▶ **Provides a system for geospatial data**
 - ▶ **All possible applicable scales**
 - ▶ **Broadest geographic coverage**
 - ▶ **Consistent and comparable**
 - ▶ **Searchable and accessible**

NSDI Grand Scheme

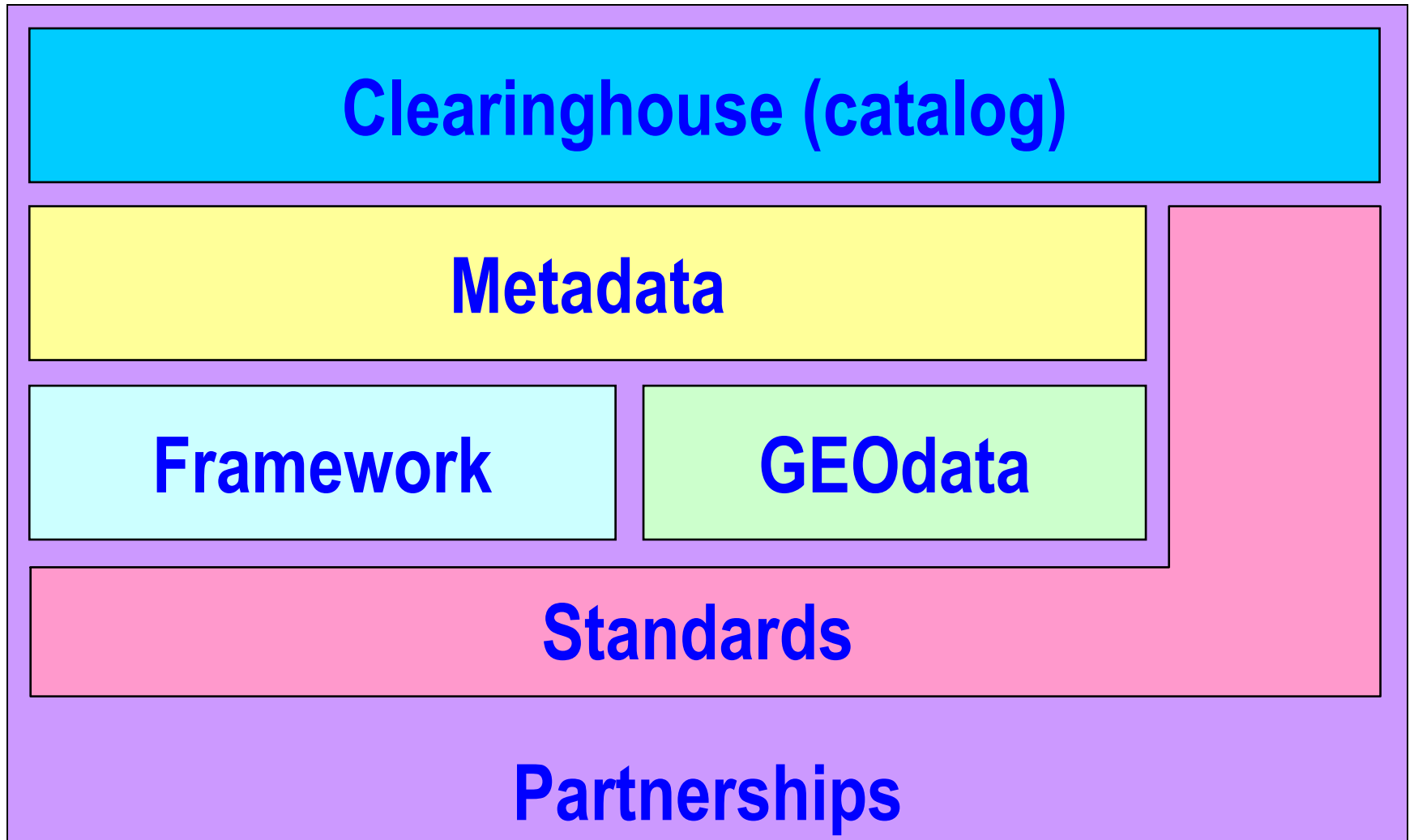
- ▶ **Reduce cost**
- ▶ **Reduce redundancy**
- ▶ **Increase accuracy**



NSDI Grand Scheme

- ▶ **Coordination for GSDI (Global NSDI)**
- ▶ **Other countries engaged in similar efforts**

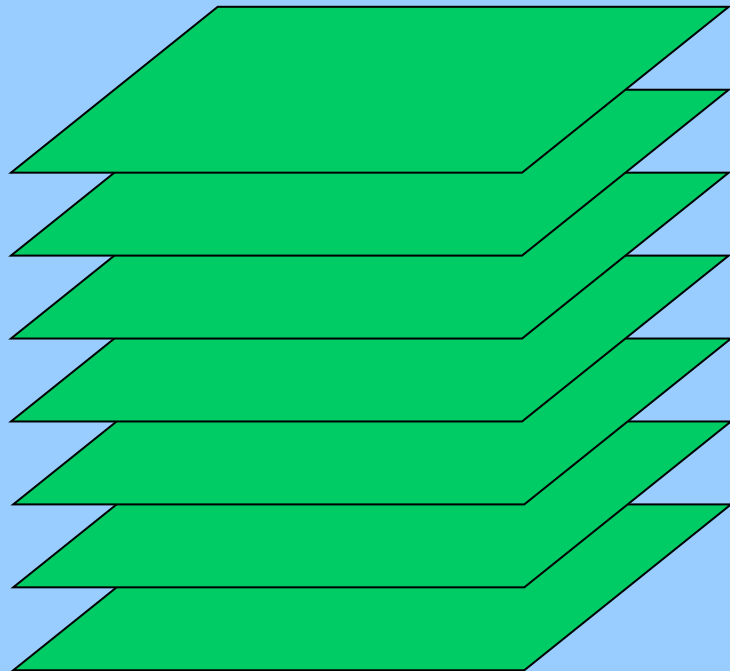
NSDI Structure



Framework Data

- ▶ **Fundamental data layers**
 - ▶ **Collected at multiple scales**
 - ▶ **Used by government to produce reference and topographic maps**
 - ▶ **Datasets developed and maintained with common content specification**

Framework Data



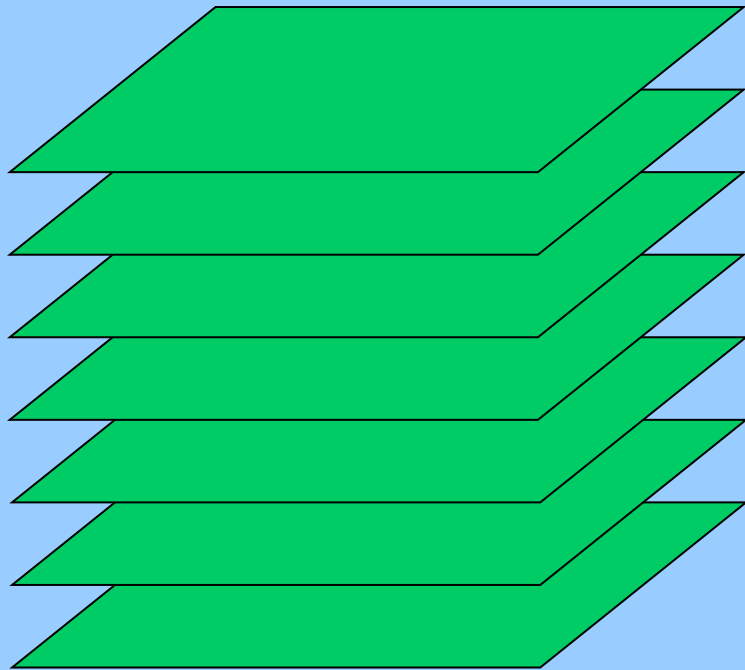
Hydrography
Transportation
Elevation / bathymetry
Cadastral
Administration
Orthoimagery
Geodetic control

Framework Data

- ▶ **Significant value added for commercial businesses**
- ▶ **A foundation for spatial information and attributes**
- ▶ **A base on which other data may be compiled or referenced**

Other Geospatial Data

Example Geospatial Data



Precipitation

Elk distributions

Soil

Wind energy potential

Crime

Businesses

Wildfires

Other Geospatial Data

- ▶ **Requires**

- ▶ **Clear and consistent documentation**
- ▶ **Consistent spatial reference**
- ▶ **Consistent collection and structure**
- ▶ **Publication**
 - ▶ **Awareness and access**

Metadata

**Metadata is where the
change is happening**

Metadata

Answers Questions

- ▶ **Who**
- ▶ **What**
- ▶ **Where**
- ▶ **How**
- ▶ **When**
- ▶ **Why**



Uses of Metadata

- ▶ **Catalog and maintain an organization's investment in the data**
- ▶ **Provide the information necessary to determine the applicability of data**

FGDC CSDGM

- ▶ **Content Standard for Digital Geospatial Metadata Version 1 (FGDC-STD-001)**
- ▶ **Approved June 8, 1994**
- ▶ **Provided basic framework for metadata activities**



National Spatial Data Infrastructure

Content Standard for Digital Geospatial Metadata Workbook
(For use with FGDC-STD-001-1998)

Version 2.0

Federal Geographic Data Committee

May 1, 2000

Federal Geographic Data Committee

Department of Agriculture • Department of Commerce • Department of Defense • Department of Energy
Department of Health & Human Services • Department of Housing and Urban Development
Department of the Interior • Department of Justice • Department of State
Department of Transportation • Environmental Protection Agency
Federal Emergency Management Agency • Library of Congress
National Aeronautics and Space Administration • National Archives and Records Administration
National Science Foundation • Tennessee Valley Authority

FGDC CSDGM

- ▶ **Content Standard for Digital Geospatial Metadata Version 2 (FGDC-STD-001-1998)**
 - ▶ **Approved June 19, 1998**
 - ▶ **Supersedes CSDGM VI - June 8, 1994**
 - ▶ **Provides for Profiles & User Extensions**
 - ▶ **FGDC VI Compliant Metadata Records still compliant**

Metadata Content Standard

FGDC - CSGDM

- ▶ **Identification**

- ▶ Abstract, keywords, time period...

- ▶ **Data quality**

- ▶ Attribute accuracy, completeness...

Metadata Content Standard

FGDC - CSGDM

- ▶ **Spatial data organization**
 - ▶ Indirect/direct spatial reference
- ▶ **Spatial reference**
 - ▶ Coordinate System...

Metadata Content Standard

FGDC - CSGDM

- ▶ **Entity and attributes**
 - ▶ Description, data dictionary...
- ▶ **Distribution information**
 - ▶ Contact, liability...
- ▶ **Metadata reference**
 - ▶ Data, contact, standard name...

Updating the FGDC

**North American Profile
(NAP)**



It's coming...



Organization of Standards

FGDC	NAP	ISO
Section	Section	Class
Compound	Class (named as element in schema)	Subclass
Element	Attribute (named as elements in schema)	Attribute
Domain (listed in the Standards)	Domain (from CodeLists)	Domain (from CodeLists)

Validates against
FGDC CSDGM
schemas

Validates against ISO
19139 schemas: NAP
will have stricter
validation

Questions

