

# Internationalizing Geospatial Metadata



**Westat**

# International Standards

**“The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.”**

**STANDARDS GUIDE ISO/TC 211 GEOGRAPHIC  
INFORMATION/GEOMATICS 2009-06-01**

# STANDARDS GUIDE ISO/TC 211

## GEOGRAPHIC INFORMATION/GEOMATICS

### 2009-06-01

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**Recommend**  
**ISO 19115**  
**ISO 19139**  
**ISO 19110**

# Why International Standards?

## Data are global

[www.gsdi.org](http://www.gsdi.org)



# Why International Standards?

- **FGDC standards are really good but ...**
  - **Not multi-lingual**
  - **Developed before globalization**
  - **Developed to meet the needs of NSDI**

# Why worry about the ISO Metadata Standard?

- **Office of Management & Budget Circular A-119**
  - **Directs preference in use of International Standards & National Standards**

# Why worry about the ISO Metadata Standard?

- **Global environment**
- **Global Spatial Data Infrastructure**



# Why worry about the ISO Metadata Standard?

**FGDC defers to ISO Metadata  
Standard**



# ISO Metadata Standard Development

- **ISO 19115, Geographic Information - Metadata**
- **Developed by ISO Technical Committee 211**

# ISO Metadata Standard Development

- **Members (One vote/per member)**
  - **32 Voting Nations, 31 Observing Nations**
  - **32 External Liaison Organizations**
- **Developed via consensus**

# ISO Metadata Standard Development

- **Voluntary standards**
- **Geared towards profiles**
- **Provides for user defined elements**

# ISO Standards

- **ISO/TC 211**  
(<http://www.isotc211.org>)
- **Methods, tools and services for data management (including definition and description)**

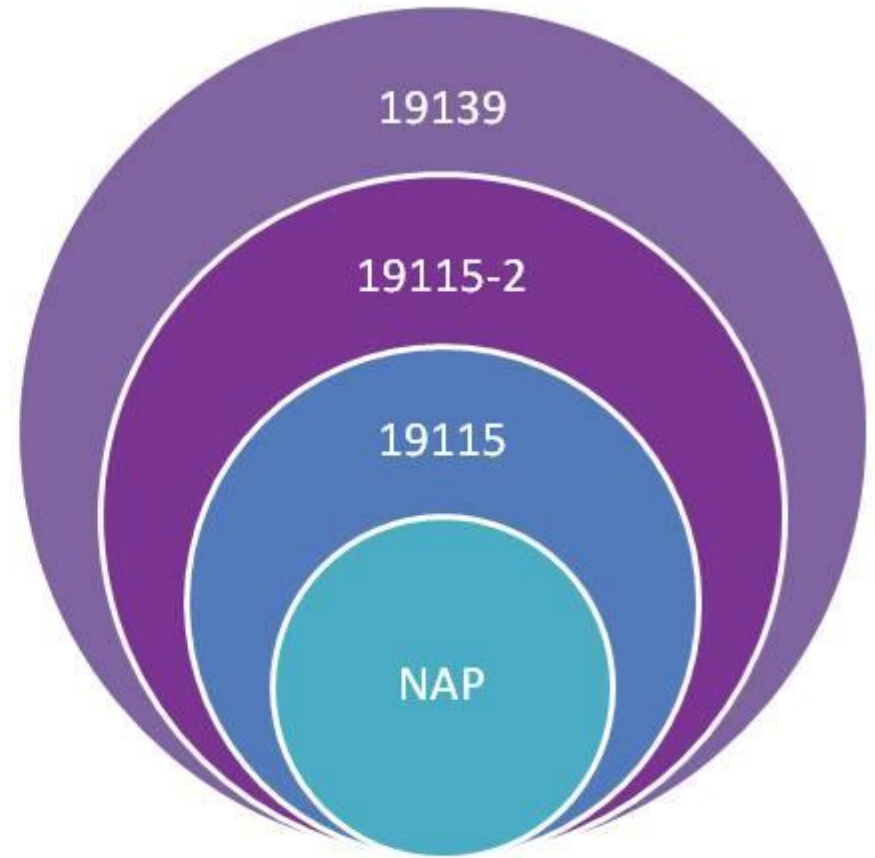
# ISO Standards

- **Metadata standards for digital geospatial data**
  - **FGDC to ISO is possible and because 19115 is so flexible**

# ISO Standards

- **Acquiring**
- **Processing**
- **Analyzing**
- **Accessing**
- **Presenting**
- **Transferring**

# Comparing the CSDGM to the ISO



# Comparing ISO and CSDGM Metadata Standard

## Differences

- **ISO contains more elements than FGDC**
- **Necessary to meet international requirements**



# Comparing ISO and CSDGM Metadata Standard

## Differences

- **Many more optional elements**
- **Addresses many known deficiencies in CSDGM (i.e. Raster/Imagery)**

# Comparing ISO and CSDGM Metadata Standard

## Differences

- **Terminology differences**
- **Obligation differences**
- **Element name differences**

# Comparing ISO and CSDGM Metadata Standard

## Benefits

- **Flexible standard**
- **Feature properties**
- **Features clearinghouses and other services**

# Comparing ISO and CSDGM Metadata Standard

## Benefits

- **Implements an international structure to metadata**
  - **Discover**
  - **Access**
  - **Assess**



# Comparing ISO and CSDGM Metadata Standard

## Benefits

- **Hierarchical structure to create packages of metadata for reuse/combine to form new metadata records**

# Comparing ISO and CSDGM Metadata Standard

## Benefits

**Provides information about the  
geographic data OR service**

- **Identification**
- **Extent**
- **Quality**
- **Spatial schema**
- **Temporal schema**
- **Spatial reference**
- **Distribution**

# Who is using the ISO?

- **National profiles**
  - **United States (NAP)**
  - **Canada (NAP)**
  - **European Union (Inspire)**
  - **Australia**
  - **New Zealand**
  - **Mexico**

# FGDC vs. ISO

## Metadata – FGDC

- Identification
- Data quality
- Spatial organization
- Spatial reference
- Entity/attributes
- Distribution
- Metadata reference

## Metadata - ISO

- Identification
- Data quality
- Spatial Representation
- Reference system
- Feature catalogue
- Distribution
- Metadata reference
- Portrayal catalogue
- Citation
- Responsible party
- Address
- Extent (BP, VT)
- On-line resource



# North American Profile

**As a member of ISO, the US participated in the development of ISO 19115 and has coordinated with Canada to develop the *North American Profile* (NAP) of ISO 19115**

# NAP Background

- **The content of ISO 19115 strongly resembles the ‘sections’ of the CSDGM**

# What is the North American Profile?

- **July 7, 2009 American National Standards Institute, ANSI, published NAP**
- **Includes nearly all of the CSDGM**



# What is the North American Profile?

- **Collaborative work of US and Canadian scientific volunteers**
- **Identical US and Canadian versions**



# What is the North American Profile?

- **Includes service metadata**
- **Identifies content to describe geospatial data**



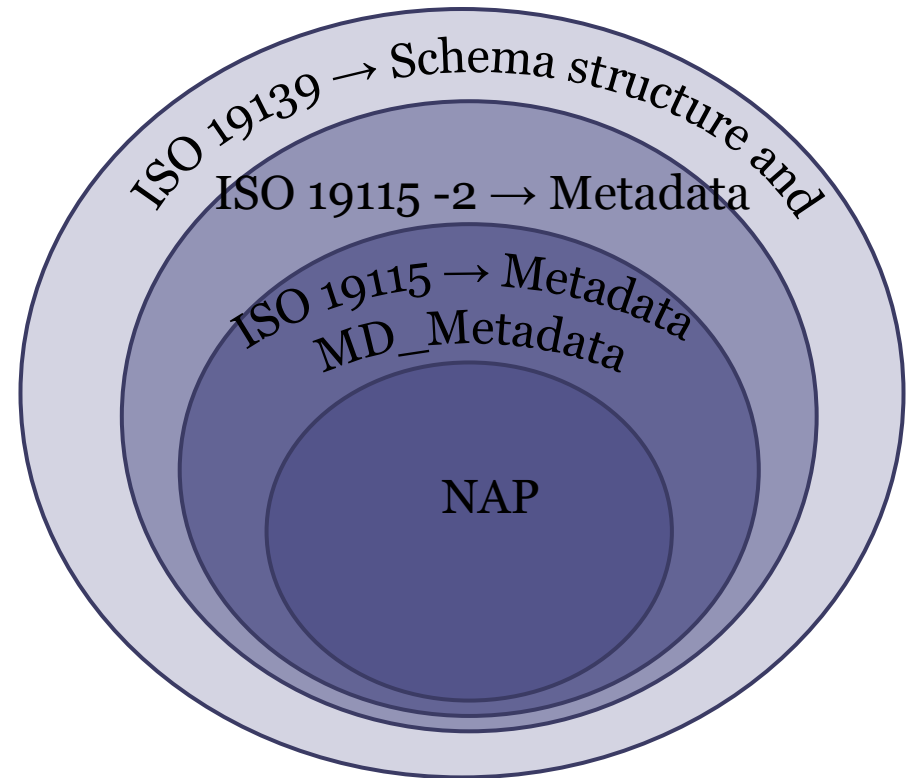
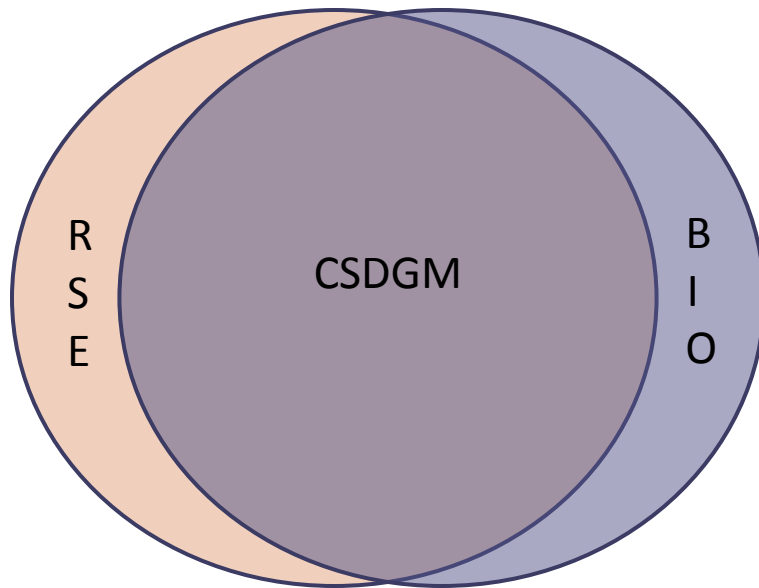
# NAP Facts

- **Will validate against ISO 19139 schemas**
- **Does not contain entity and attribute information; will use Feature Catalog (ISO 19110) to document entities and attributes**

# NAP Facts

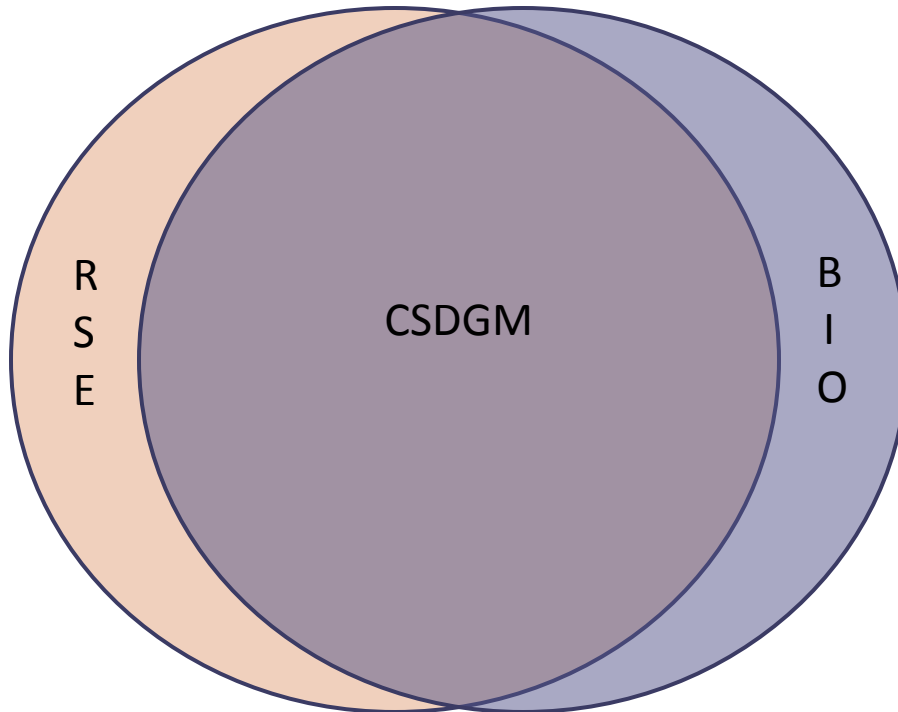
- **ISO 19115 uses the term “Conditional” instead of “Mandatory-if-Applicable”**
- **Multi-lingual**

# Comparing FGDC, ISO, and NAP Metadata Standards



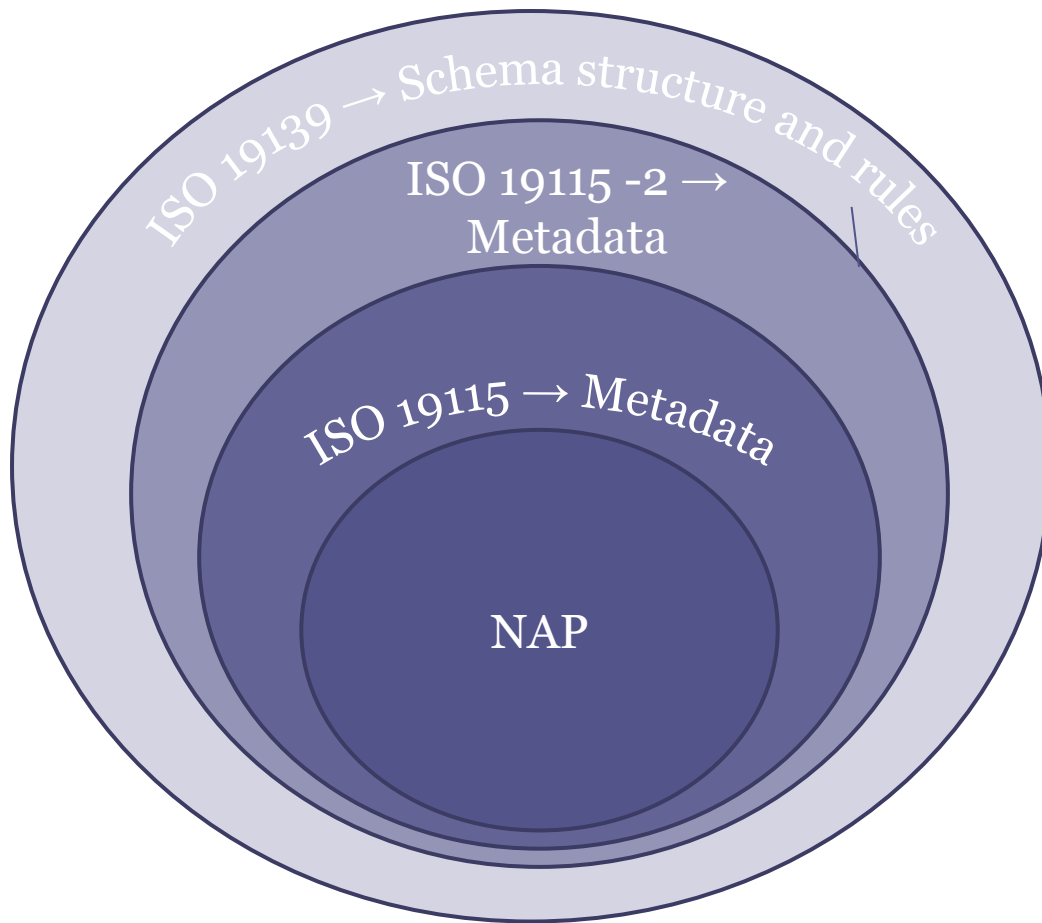


# Comparing FGDC, ISO, and NAP Metadata Standards



- **FGDC CSDGM – ‘Standard’ Geospatial Metadata (fgdc-std-001-1998.xsd)**
- **FGDC RSE – Extensions for Remote Sensing (fgdc-std-012-2002.xsd)**
- **FGDC Bio – Biological Profile (fgdc-std-001.1-1999)**

# Comparing FGDC, ISO, and NAP Metadata Standards



- **ISO 19139** – Schema to which the ISO 191\*\* series validates against, defines rules and structure
- **ISO 19115** – ‘Standard’ metadata (comparable to the FGDC CSDGM) gmd.xsd
- **ISO 19115-2** – Remotely Sensed and Gridded Data (comparable to FGDC RSE) gmi.xsd
- **NAP** – North American Profile of the ISO 19115 nap.xsd

# CSDGM / NAP

## What's the same?

- **Most of the CSDGM is in the NAP**



# CSDGM / NAP

## What's the Same?

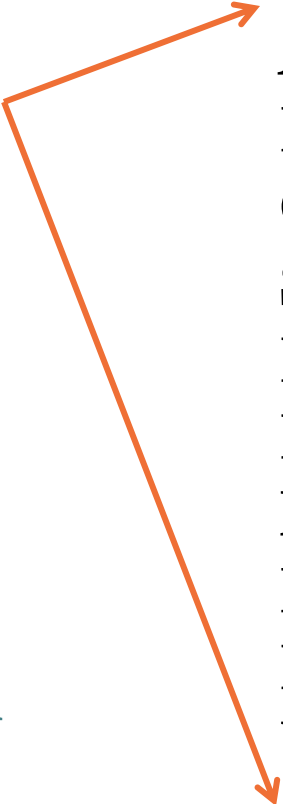
- **Purpose**
  - **Discovery, access, assess**
  - **Document agency assets**
  - **Agency responsibility**

# CSDGM / NAP

## What's the Same

- **Metadata Information**

- **Identification Information**
- **Content information**
- **Distribution Information**
- **Data quality Information**
- **Metadata constraints**
- **Metadata maintenance**
- **Constraint information**
- **Schema/portrayal info**



**Citation**  
**Abstract**  
**Purpose**  
**Credit**  
**Status**  
**Point of contact**  
**Keywords**  
**Maintenance**  
**Information**  
**Browse graphic**  
**Usage**  
**Constraints**

# CSDGM to NAP Differences

- **Terminology**

- **Conditionality**

**Mandatory-if-applicable → Conditional**

- **Data Model- Relational → UML**

- **Major sections to Major Classes**



# CSDGM to NAP Differences

- **Extensive code lists to control vocabularies**
- **Multi-level metadata**
- **Eliminated elements**



# NAP Data Quality Differences

## Scope

**Level**  
**Extent**  
**Level Description**

## Lineage

**Statement**  
**Process step description**  
**Rationale**  
**Date/time**  
**Processor**  
**Source**  
**Description**  
**Scale**  
**Source reference system**  
**Citation**  
**Source extent**  
**Source step**



# NAP Data Quality Differences

## Subclasses

- **Completeness**

**Completeness commission,  
completeness omission**

- **Consistency**

**Logical, conceptual, domain,  
format, topological, and  
positional, and temporal**

## Attributes

**Name of measure**

**Measure**

**Identification**

**Measure**

**Description**

**Evaluation method**

**Type**

**Evaluation method**

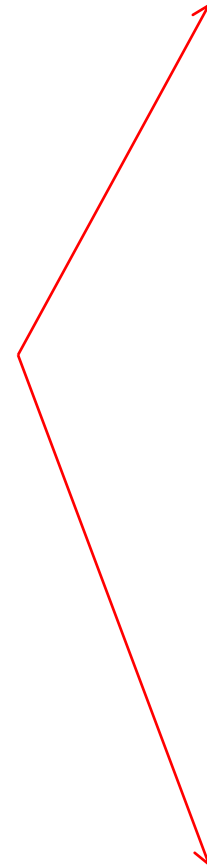
**Description**

**Evaluation**

**Procedure**

**Date/time**

**Result**



# NAP Data Quality Differences

## Subclasses

- **Accuracy**

Positional, absolute external  
positional, gridded data  
positional, relative internal  
positional, temporal,  
measurement of time accuracy,  
thematic, and non- quantitative  
and qualitative attribute  
accuracy

- **Validity**

**Temporal validity**

## Attributes

**Name of measure**

**Measure**

**Identification**

**Measure**

**Description**

**Evaluation method**

**Type**

**Evaluation method**

**Description**

**Evaluation**

**Procedure**

**Date/time**

**Result**

# Nap Code Lists

- **Data type**
- **On-line function**
- **Presentation form**
- **Role code\***
- **DQ evaluation Method**
- **Character set**
- **Classification**
- **Coverage content**
- **Data type**
- **Imaging Condition**
- **Keyword**
- **Maintenance Frequency**
- **Medium format /name**
- **Progress**
- **Restriction**
- **Scope**
- **Spatial representation**
- **Category**

# Metadata Registry

**Every national profile  
clearinghouse has a  
metadata registry**

# Metadata Registry

- **Purpose of the Registry**
  - Information about the register
  - Information describing the profile's metadata items of interest
  - Information describing code lists and its values

**Now lets think about  
transitioning...**

# Questions

