Chapter 5 Spatial data standard and metadata

1. Introduction

2. Standard and standardization

2.1 Definition of standards

documents establishing a common language, terminology, accepted practices and levels of performance, as well as technical requirements and specifications, that are used consistently for the development and use of products, services and systems

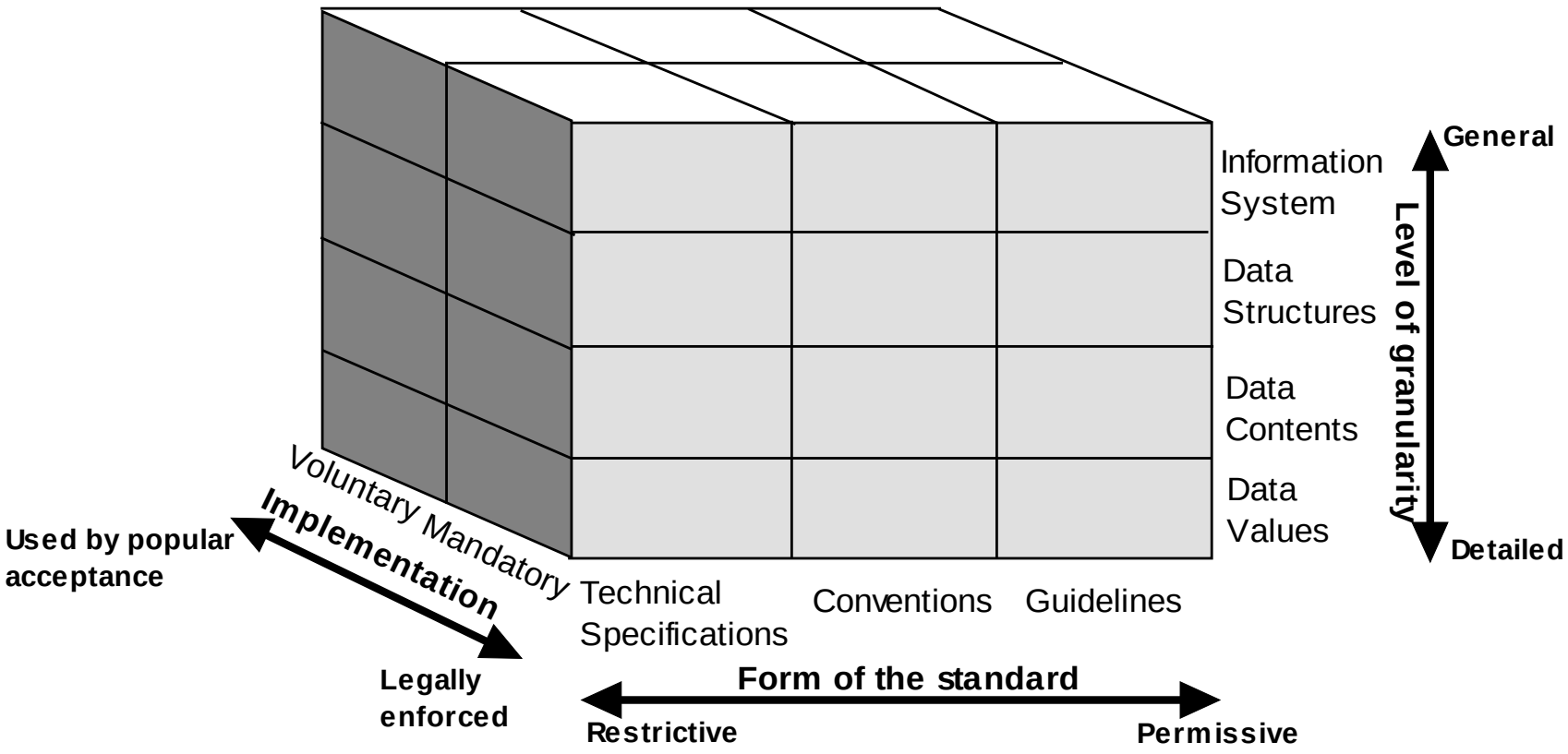


Fig 5-1 A 3-D matrix definition of standards

2.2 Classification of standards

standard can be classified in different ways and different perspectives (Fig 5-2)

2.3 Standards organizations

1) category : international, national, Industry consortia

international : ISO(International Standard Organization) TC211(GIS)

CEN(Comite Europeen de Normalization)

national : ANSI(US), NIST(US), 국토지리정보원, 한국정보통신기술협회

industry : OGC(Open GIS Consortium), W3G(World Wide Web Consortium)

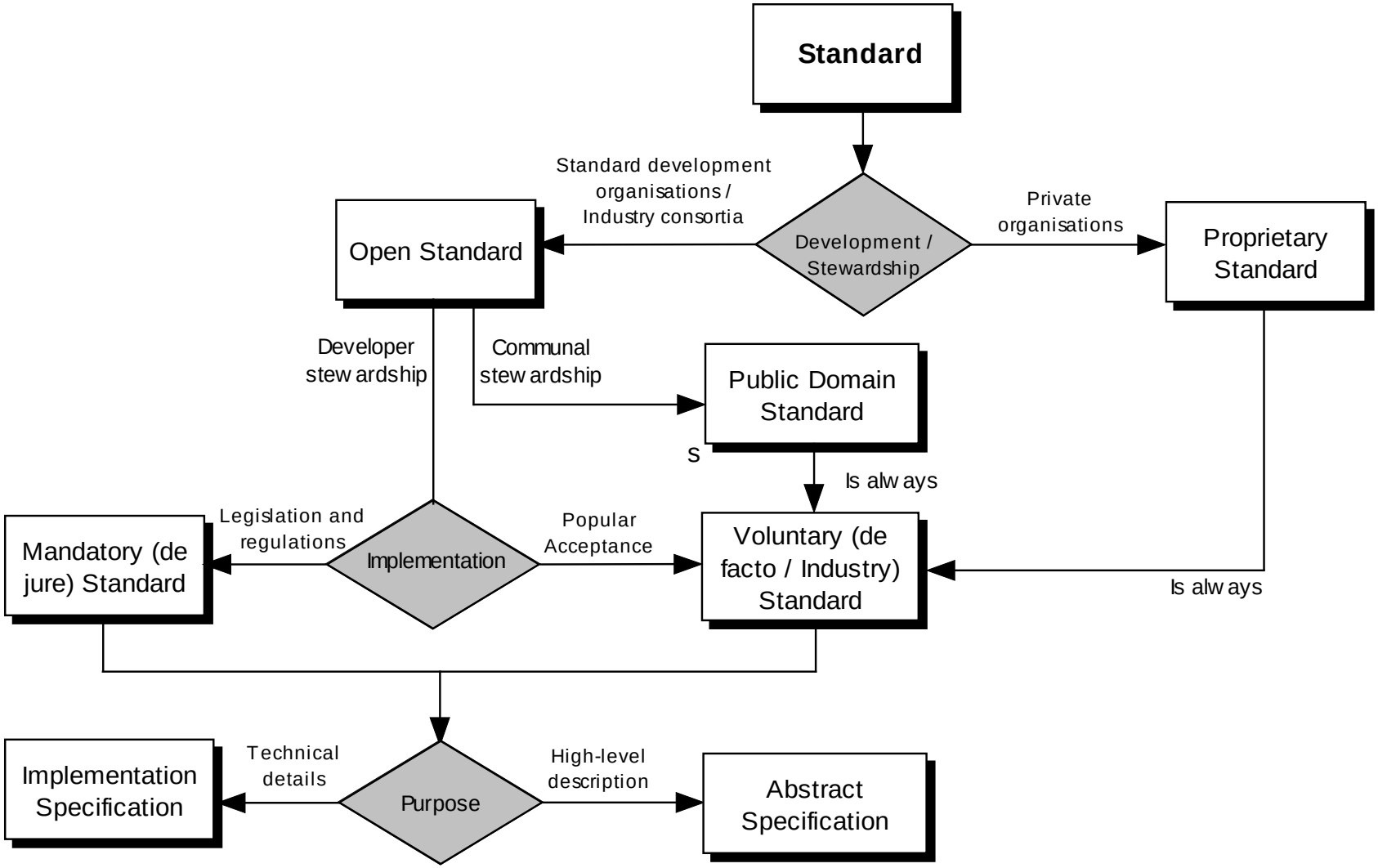


Fig 5-2 Classification of standards

3. Spatial data standards

3.1 Importance of spatial data standards

advantage of standards include :

quality assurance and control, accountability in spatial design and implementation, accessibility and interoperability, best practice in spatial data management, equal opportunity for all spatial data suppliers and users, technological innovations, synergy and scale of economies in the use of spatial data

3.2 Standards for spatial database systems (Fig 5-3)

3.3 Examples of spatial data standards (Fig 5-4 to Fig 5-9)

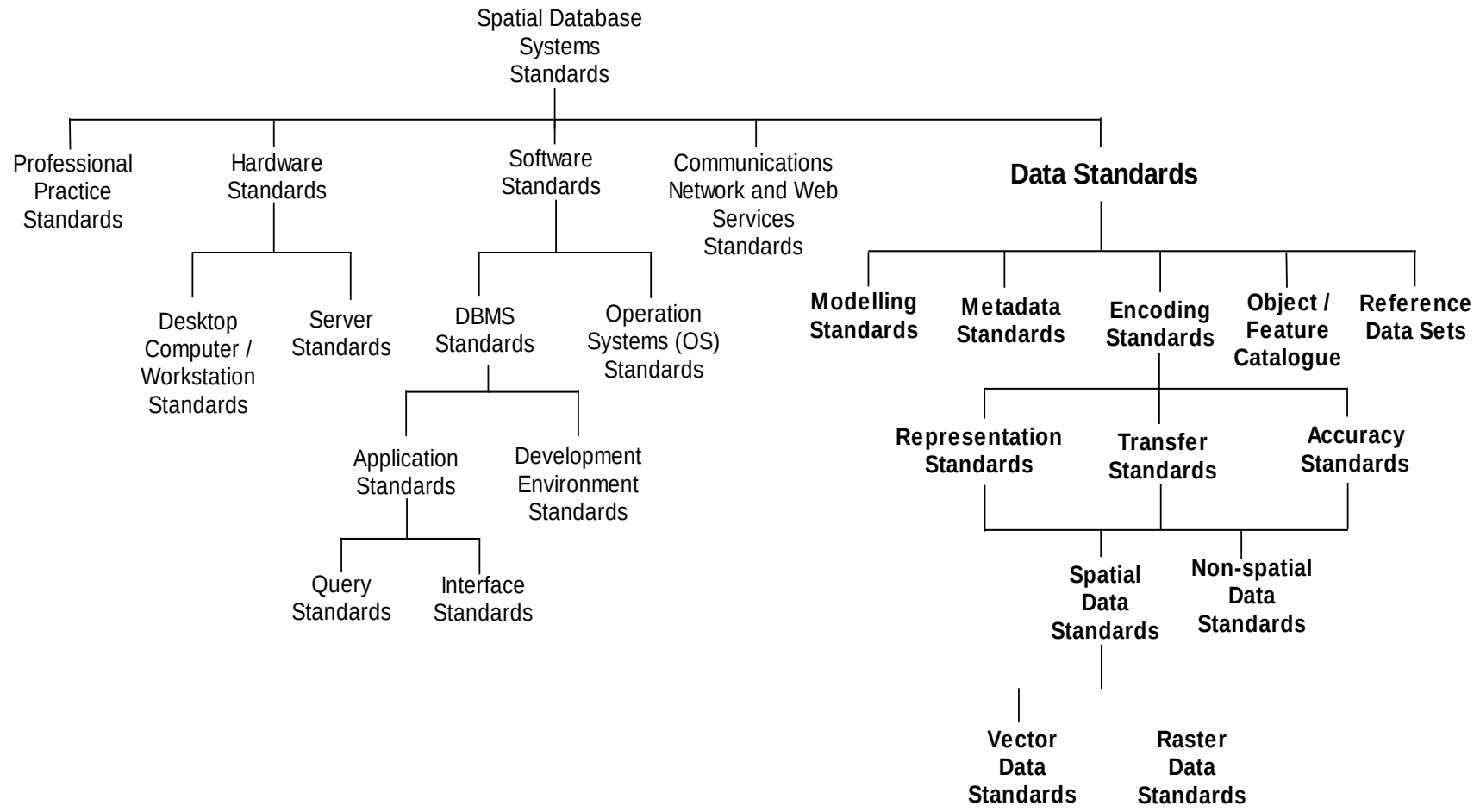


Fig 5-3 A typology of standards applicable to spatial DB systems

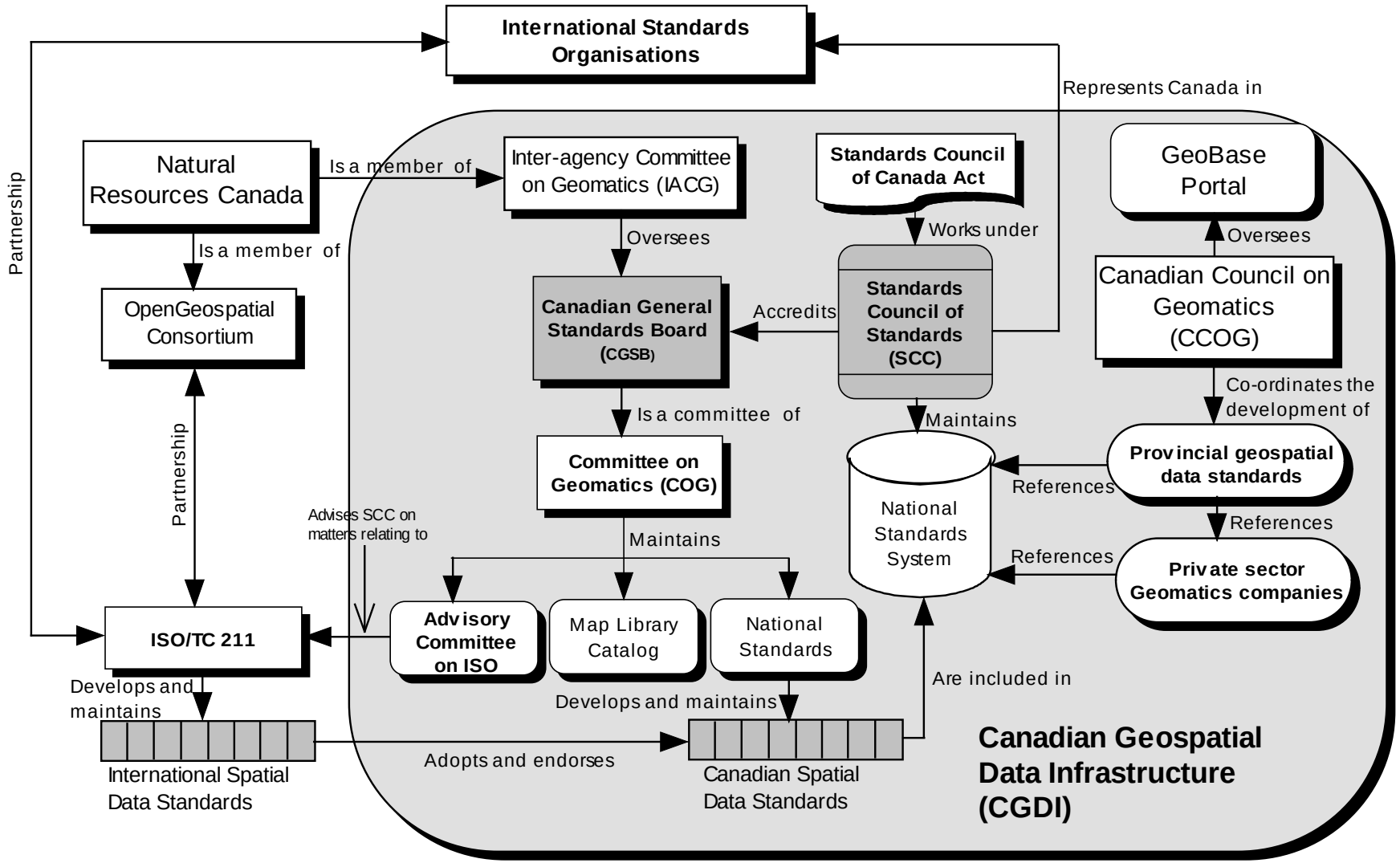


Fig 5-4 Standard development in Canada

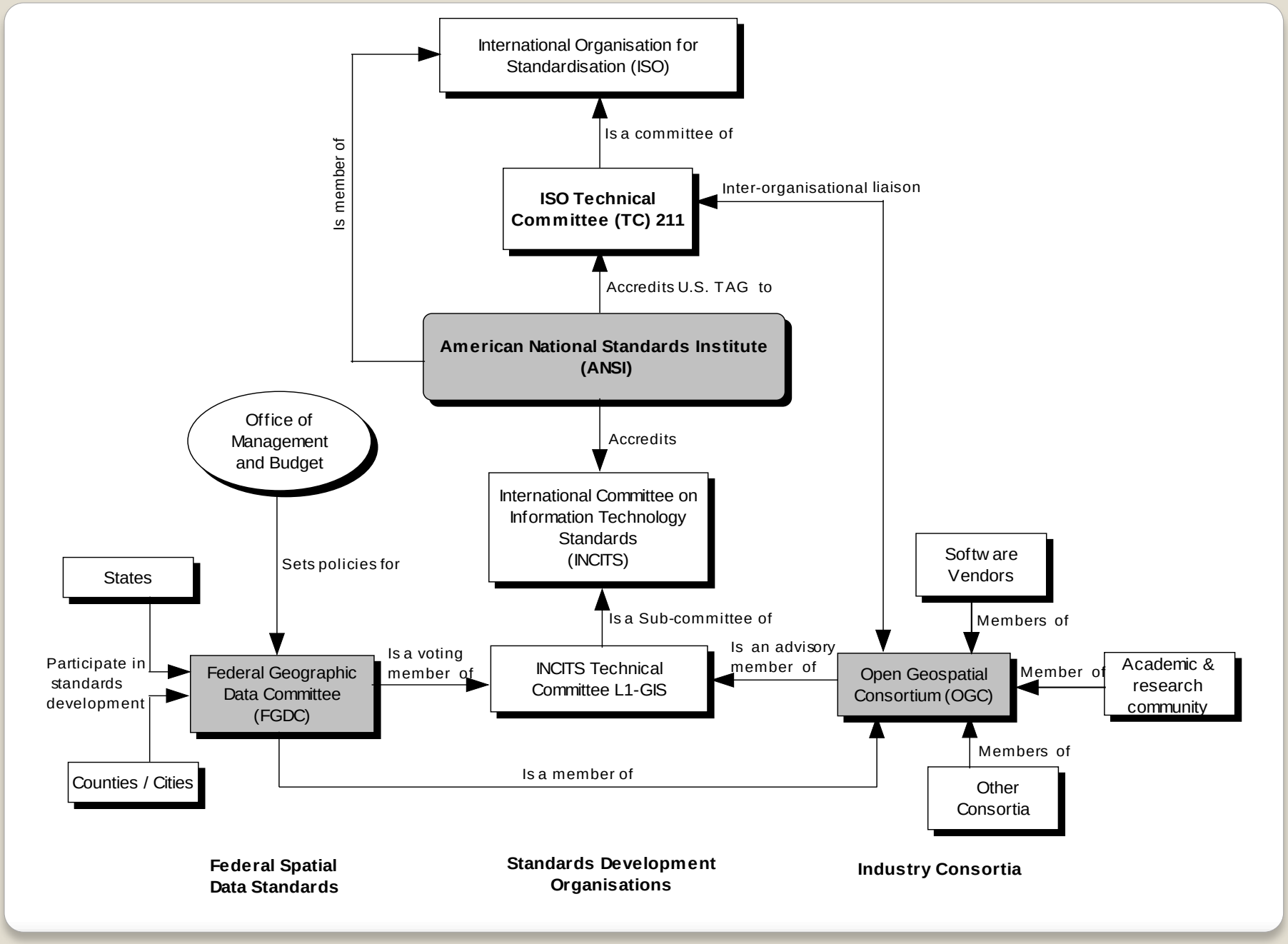


Fig 5-5 Standard development in United States

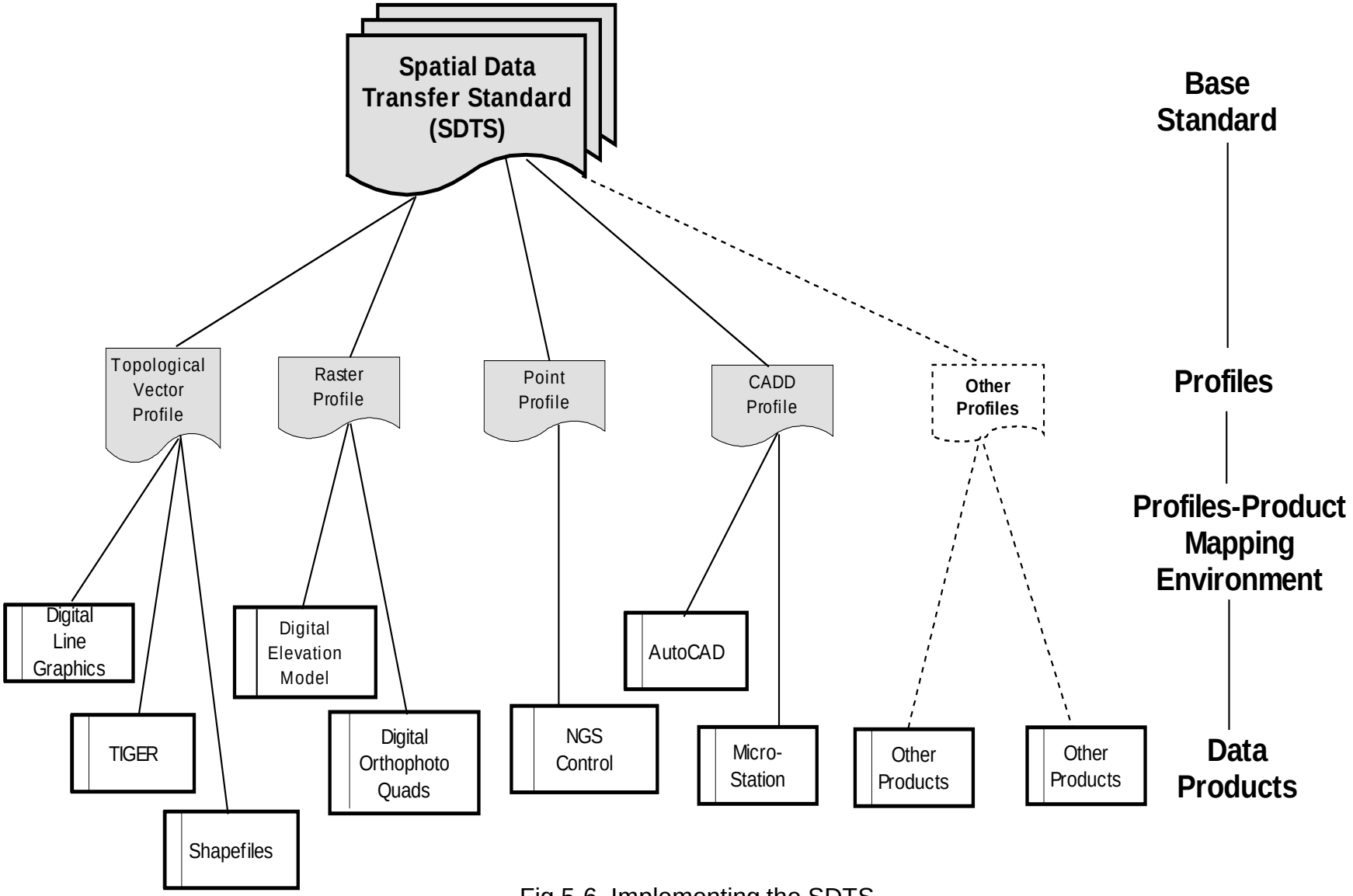


Fig 5-6 Implementing the SDTS

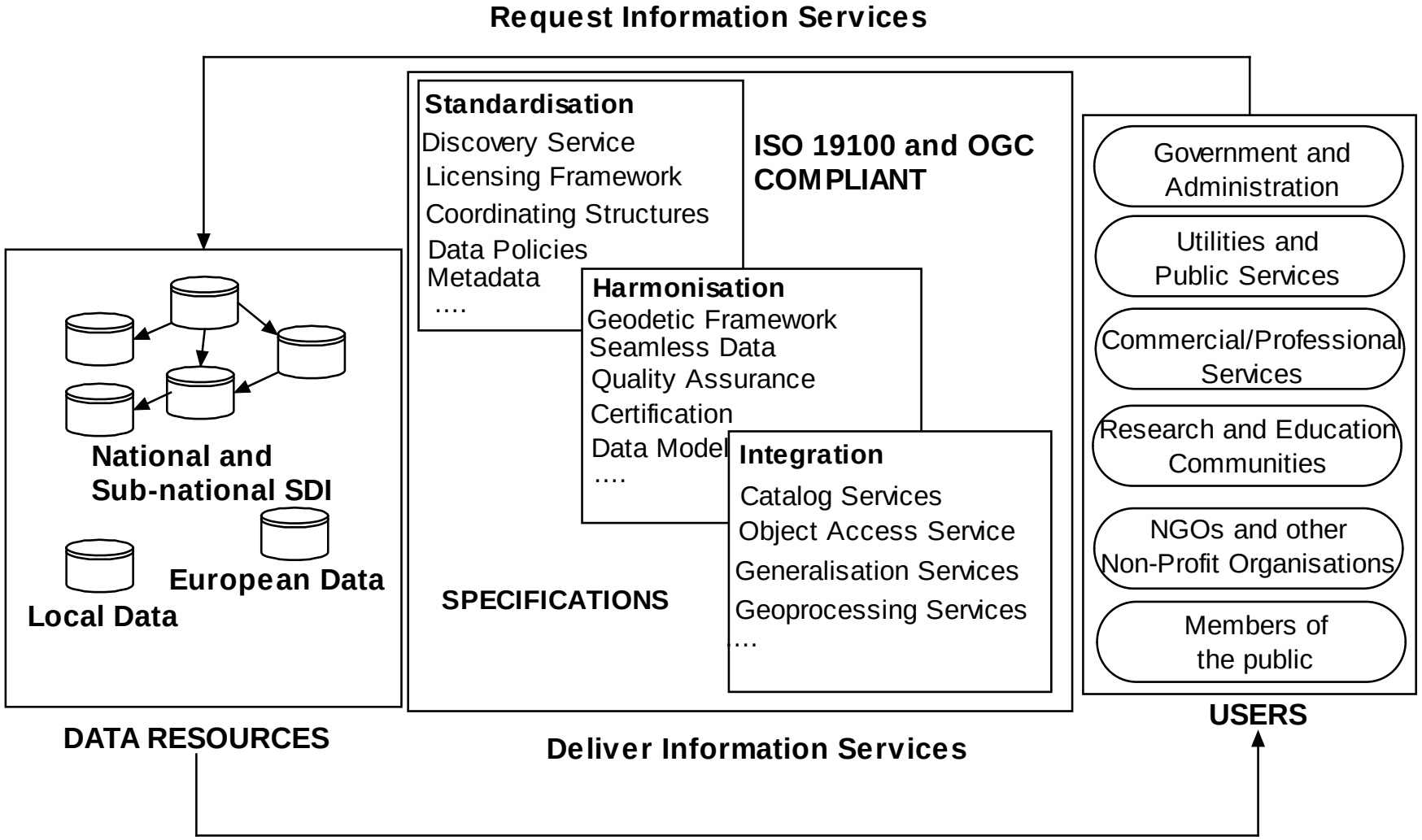


Fig 5-7 The INSPIRE spatial infrastructure high level model

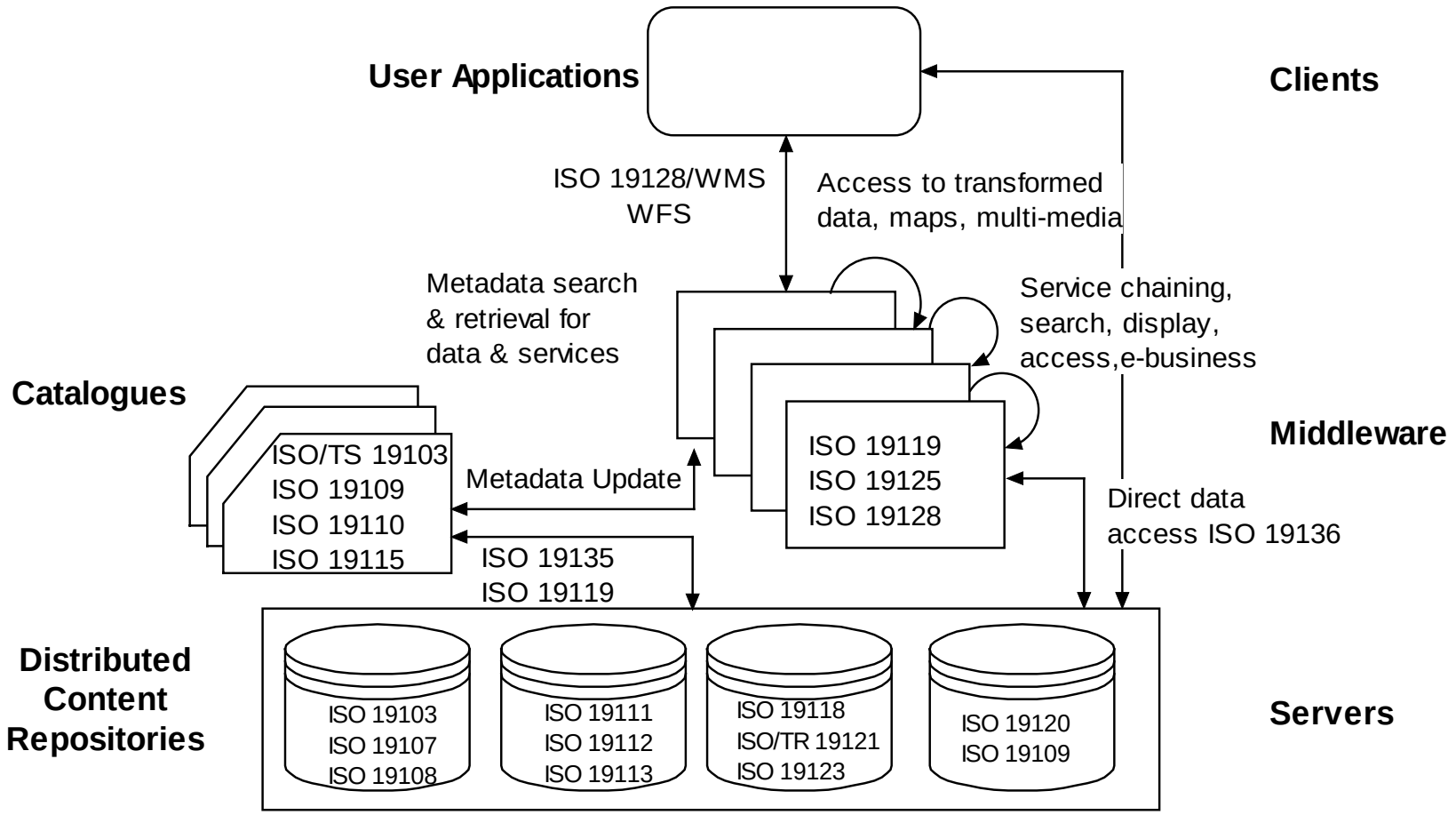


Fig 5-8 The INSPIRE architecture reference model including example ISO19100 standards

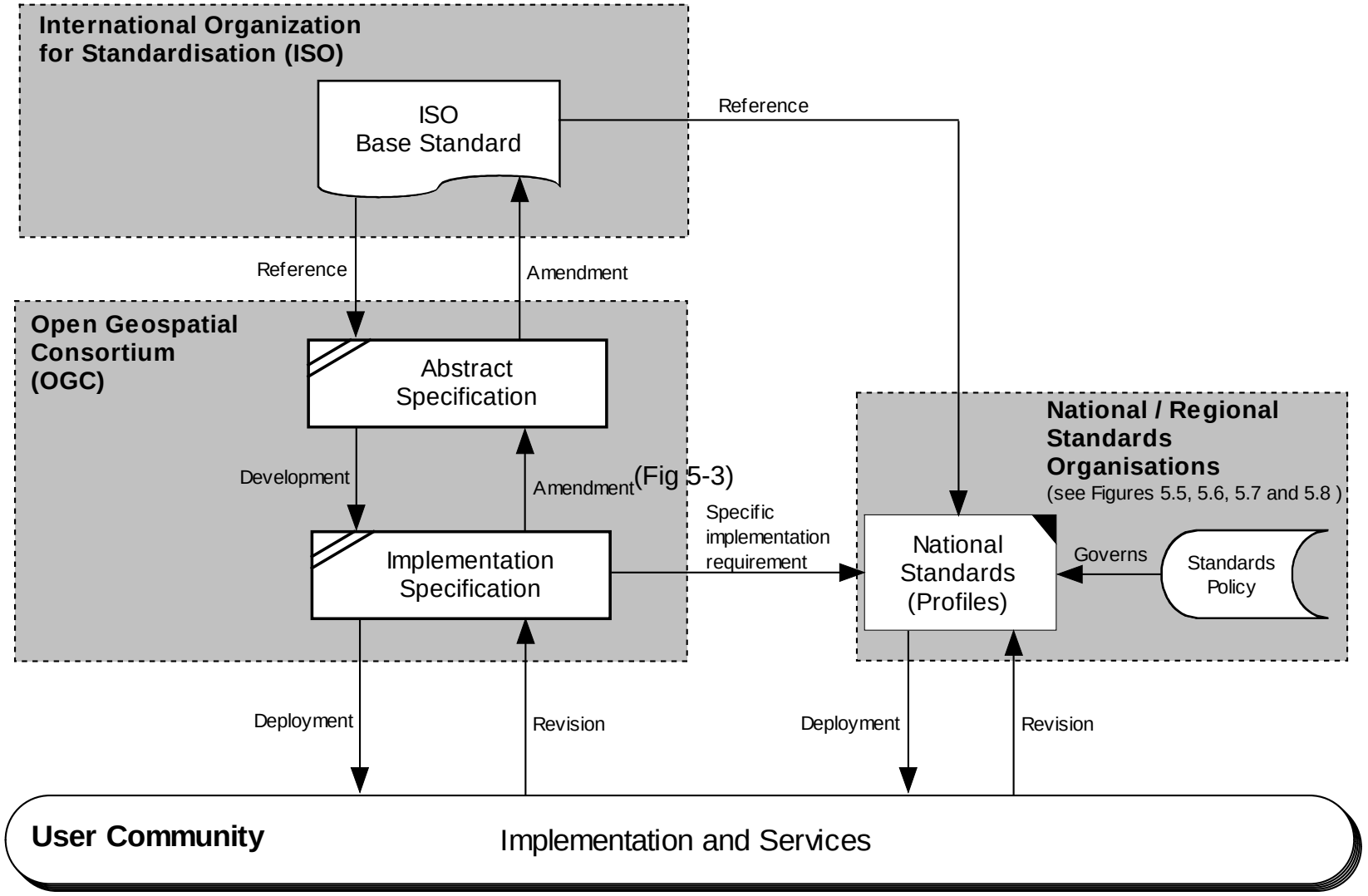


Fig 5-9 A model of a global spatial data standards infrastructure

4. Concepts and methods of metadata

4.1 Definition of metadata

data or information about data

4.2 Importance of metadata

uniformity of data collection, data management, data use, data understanding, data sharing, data achieving and warehousing

4.3 Spatial metadata standards (Fig 5-10)

4.4 Spatial metadata tools (Fig 5-11)

4.5 Process of implementing spatial metadata (Fig 5-12)

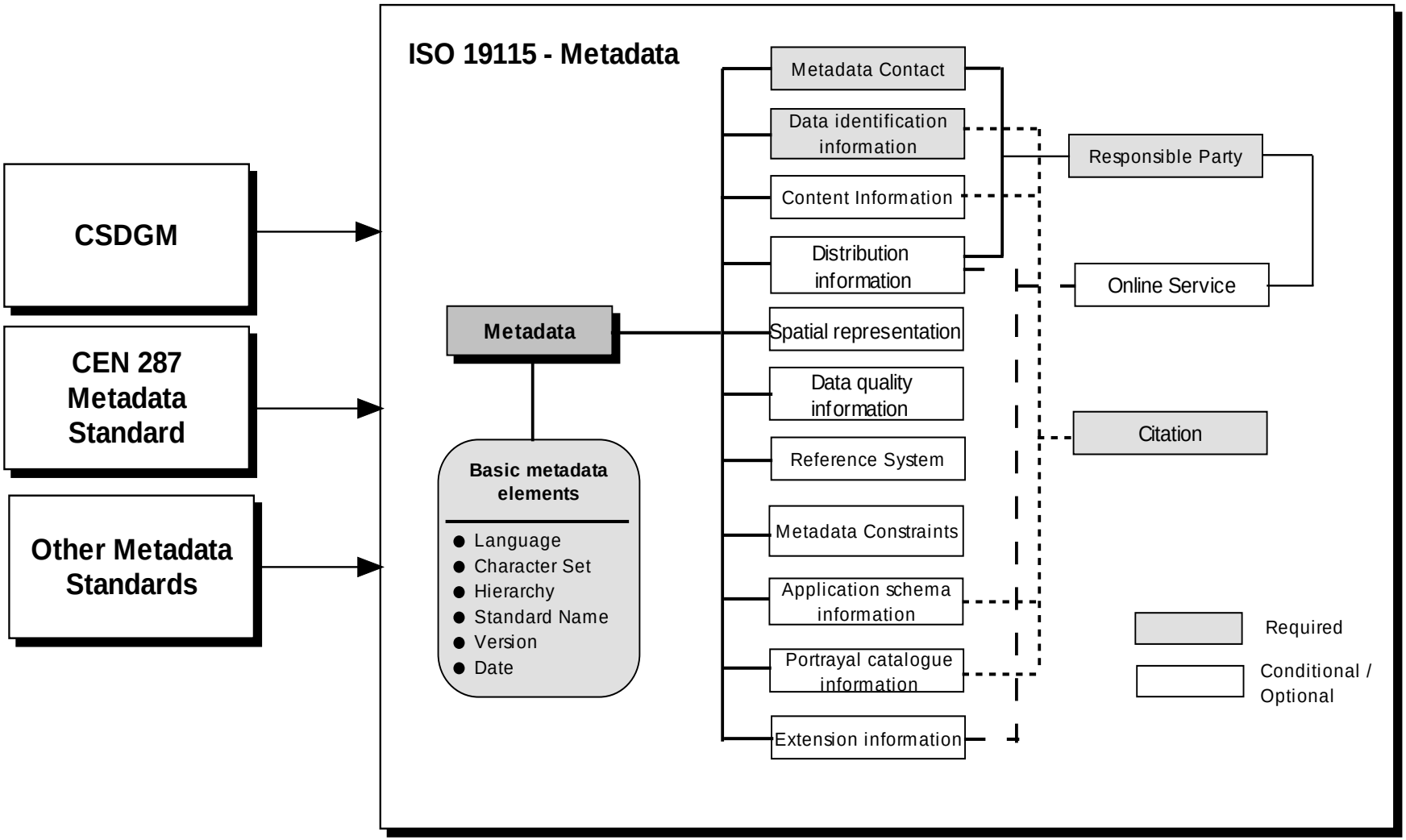


Fig 5-10 Organization of ISO 19115 metadata standard

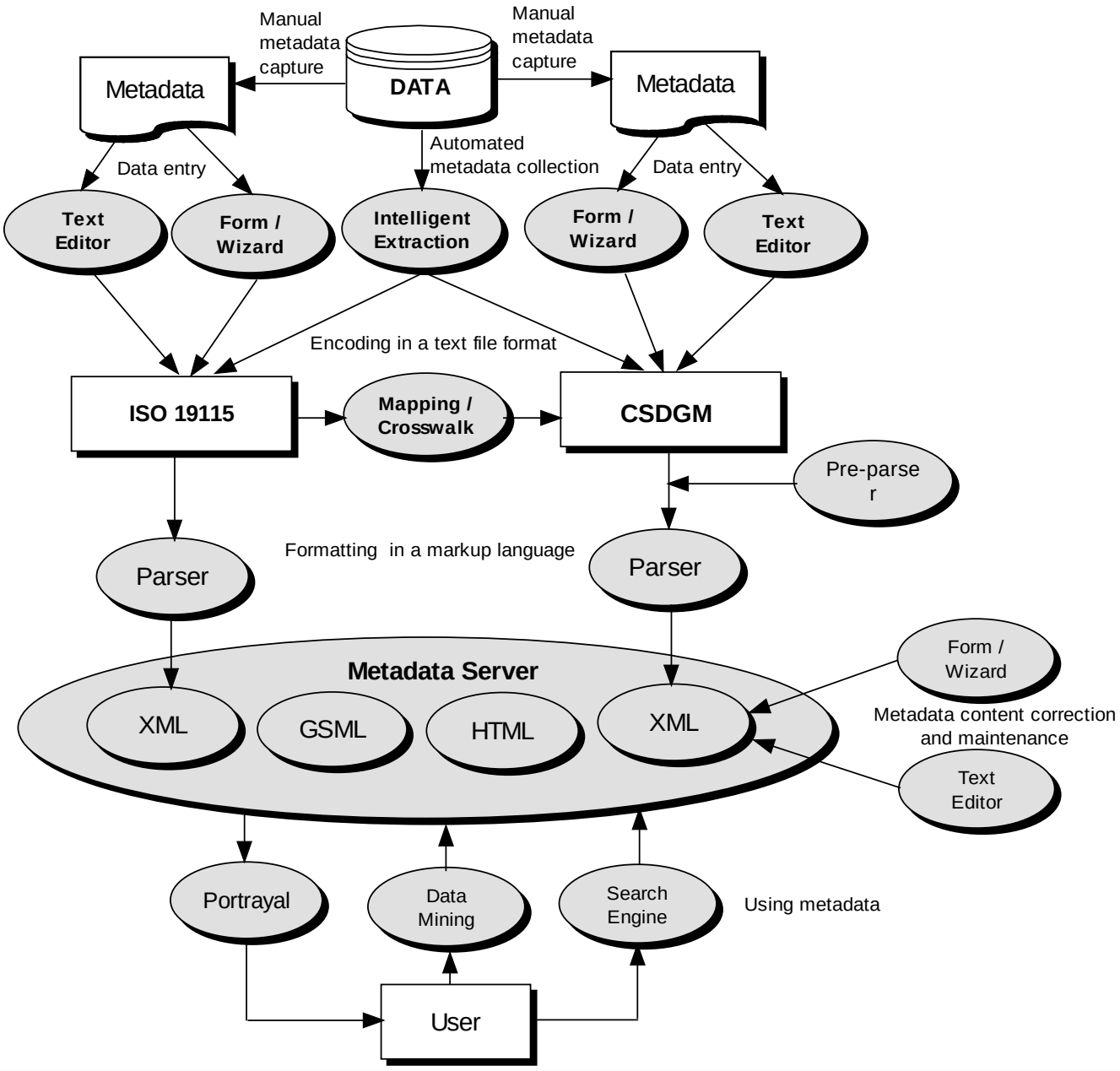


Fig 5-11 Implementing spatial metadata

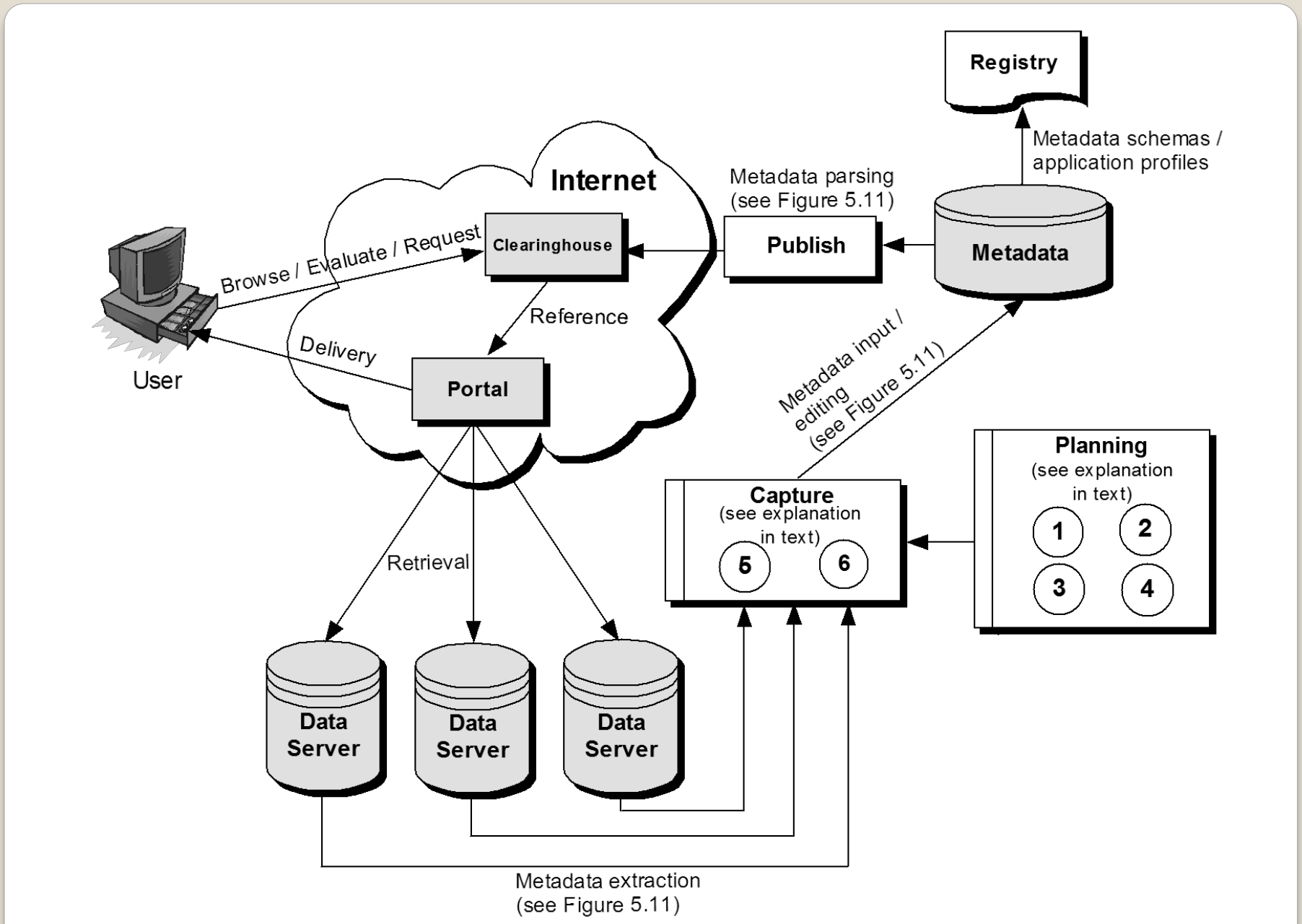


Fig 5-12 Implementing spatial metadata

5. Data standards and metadata in spatial database systems

5.1 Issues with implementing standards and metadata in spatial DB systems

embedding metadata within the data set : tight couple w/ data, but need to collect each time

storing metadata in a separate database or registry : easy to manage w/o affecting the content of data set, but require more complex procedure in case data set is updated

5.2 Model of using standards and metadata in spatial database design and implementation

(Fig 5-13)

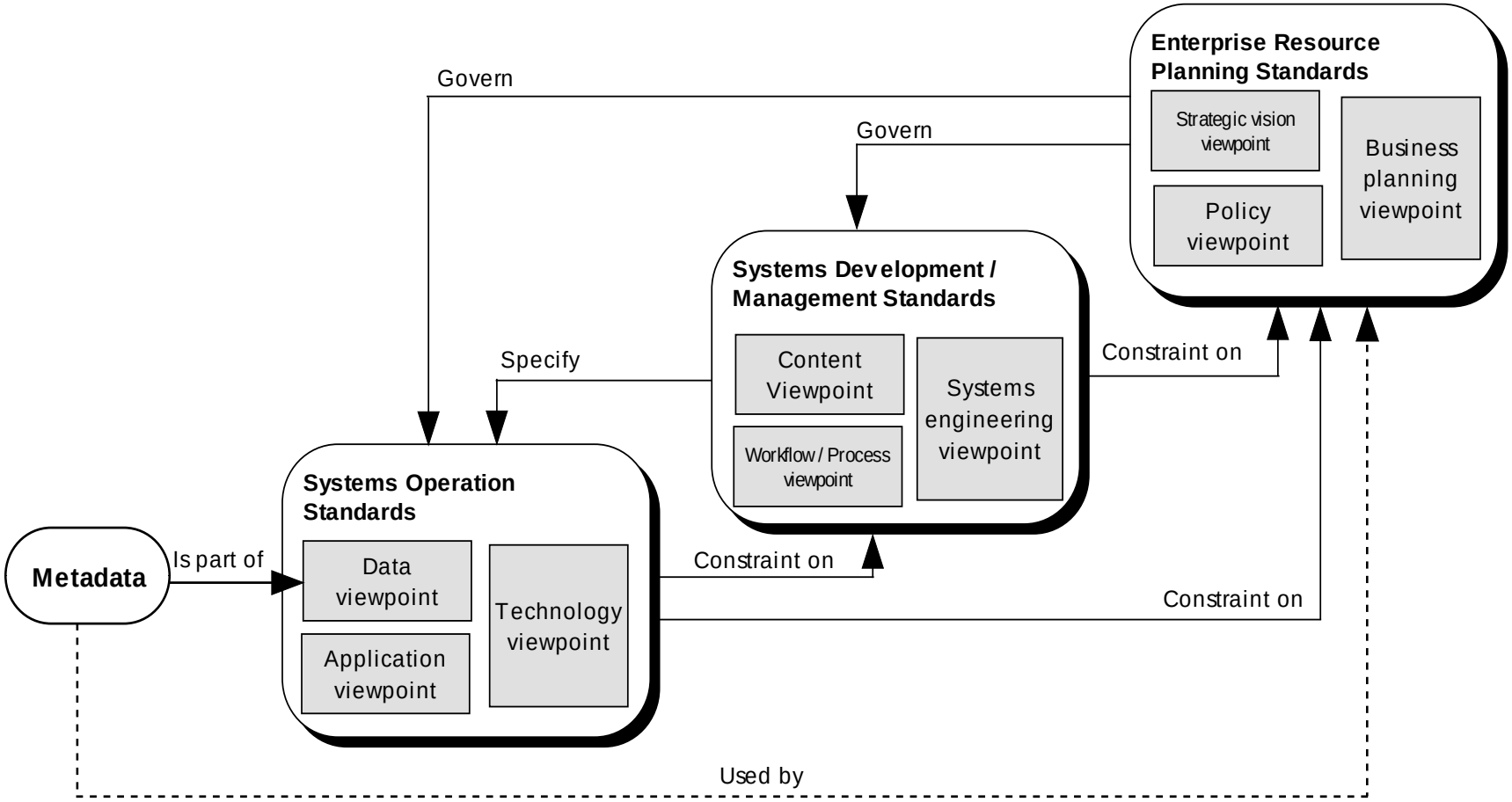


Fig 5-13 A model of a standards-based spatial DB system

ArcCatalog – ArcInfo – C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads

File Edit View Go Tools Window Help

Location: C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads

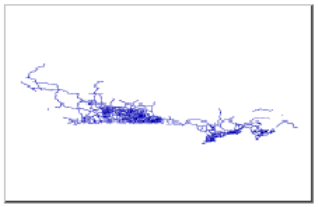
Stylesheet: FGDC ESRI

Contents | Preview | Metadata

Canada Highways

File Geodatabase Feature Class

Description | Spatial | Attributes



Keywords

Theme: line, highways, expressways, primary highways, roads, transportation

Place: Canada

Temporal: 2007

Description

Abstract

Canada Highways represents the expressways and primary highways of Canada.

Purpose

Canada Highways provides the highway system of Canada with detail appropriate for national, regional, and provincial levels.

Supplementary Information

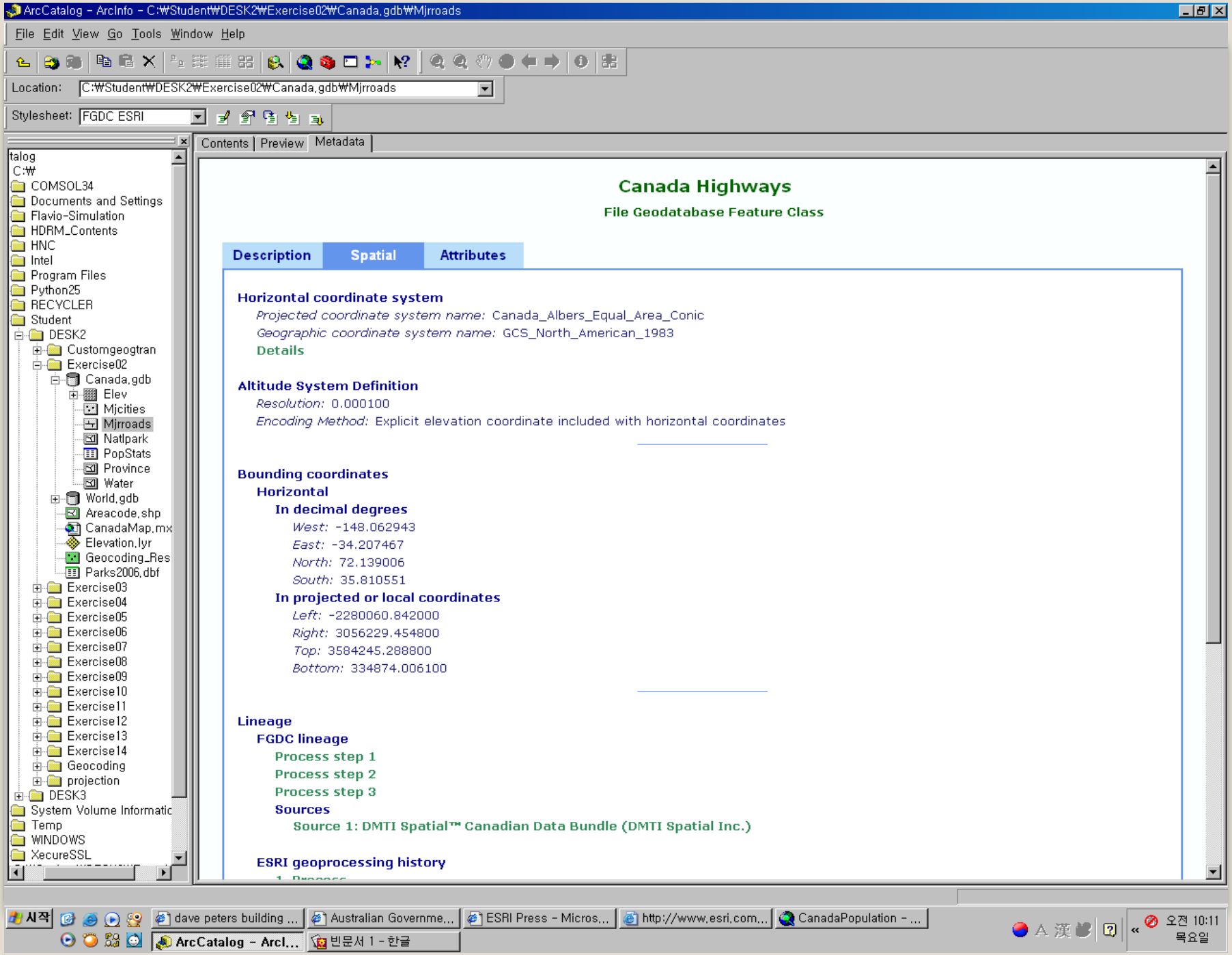
Largest scale when displaying the data: 1:10,000.

Status of the data

Time period for which the data is relevant

Publication Information

Data storage and access information

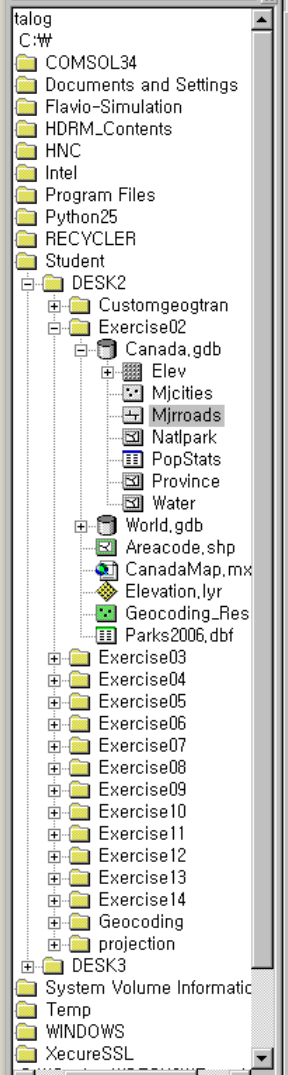

ArcCatalog - ArcInfo - C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads
File Edit View Go Tools Window Help
Location: C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads
Stylesheet: FGDC ESRI
Contents Preview Metadata
Canada Highways
File Geodatabase Feature Class
Description Spatial Attributes
Horizontal coordinate system
Projected coordinate system name: Canada_Albers_Equal_Area_Conic
Geographic coordinate system name: GCS_North_American_1983
Details
Altitude System Definition
Resolution: 0.000100
Encoding Method: Explicit elevation coordinate included with horizontal coordinates
Bounding coordinates
Horizontal
In decimal degrees
West: -148.062943
East: -34.207467
North: 72.139006
South: 35.810551
In projected or local coordinates
Left: -2280060.842000
Right: 3056229.454800
Top: 3584245.288800
Bottom: 334874.006100
Lineage
FGDC lineage
Process step 1
Process step 2
Process step 3
Sources
Source 1: DMTI Spatial™ Canadian Data Bundle (DMTI Spatial Inc.)
ESRI geoprocessing history
COMSOL34
Documents and Settings
Flavio-Simulation
HDRM_Contents
HNC
Intel
Program Files
Python25
RECYCLER
Student
DESK2
Customgeogtran
Exercise02
Canada.gdb
Elev
Mjcities
Mjrroads
Natlpark
PopStats
Province
Water
World.gdb
Areacode.shp
CanadaMap.mx
Elevation.lyr
Geocoding_Res
Parks2006.dbf
Exercise03
Exercise04
Exercise05
Exercise06
Exercise07
Exercise08
Exercise09
Exercise10
Exercise11
Exercise12
Exercise13
Exercise14
Geocoding
projection
DESK3
System Volume Informatic
Temp
WINDOWS
XecureSSL
시작
dave peters building ...
Australian Governme...
ESRI Press - Micros...
http://www.esri.com...
CanadaPopulation - ...
ArcCatalog - Arcl...
빈문서 1 - 한글
오전 10:11
목요일

ArcCatalog - ArcInfo - C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads

File Edit View Go Tools Window Help

Location: C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads

Stylesheet: FGDC ESRI



Contents | Preview | Metadata

Lineage

FGDC lineage

Process step 1

Process description: The following steps were performed by ESRI: Extracted shapefile from DMTI Spatial™ Canadian Data Bundle. Selected only expressways and primary highways, and converted shapefile to ArcInfo® coverage. Dissolved features based on all attributes, and converted back to shapefile. Added TYPE and KILOMETERS attributes and calculated their values. Added HWY_NUM attribute containing the value of highway numbers only from the NAME attribute. Changed NAME values to title case. Created ArcGIS® layer file (.lyr), projection file (.prj), and spatial indices. Converted the data set to SDC.

Process software and version: ArcView® GIS 3, ArcGIS® 9, ArcSDE®

Source used: DMTI Spatial Inc.

Process date: 20070710

Process step 2

Process description: Dataset copied.

Source used: \\BIGBOWL\C$\Desk2DevData\Canada.gdb

Process step 3

Process description: Dataset copied.

Source used: \\Rushmore\ILTCourses\desk2_93\Data_Working\Student\DESK2\Exercise02\Canada.gdb

Sources

Source 1: DMTI Spatial™ Canadian Data Bundle (DMTI Spatial Inc.)

Media: CD-ROM

Scale denominator: 1000-50000

Contribution: Attribute and geospatial data

Currentness of this source

ESRI geoprocessing history

1. Process
2. Process

Spatial data quality

Horizontal positional accuracy

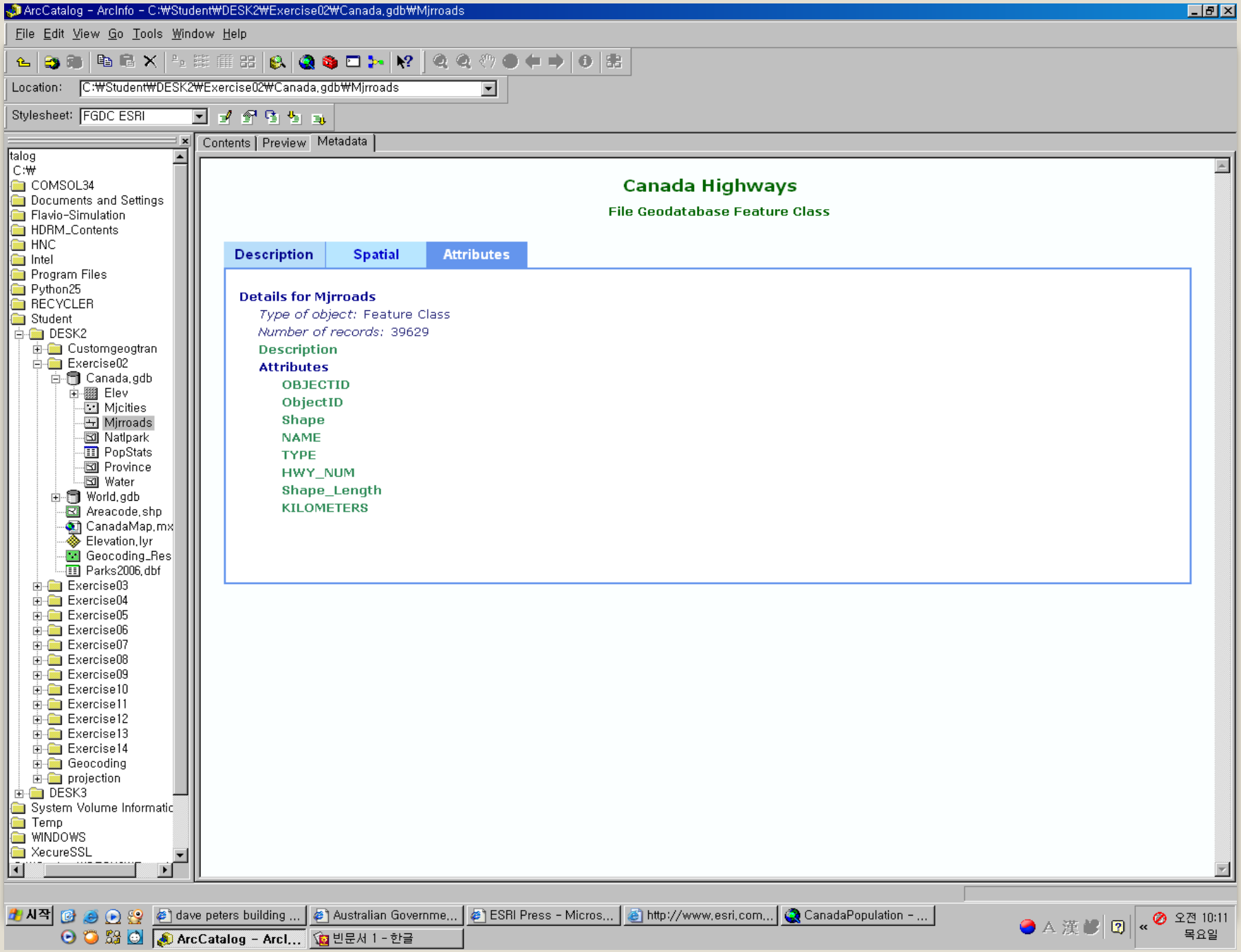
The positional accuracy is unknown.

Spatial data description

Vector data information

ESRI description

Mjrroads


ArcCatalog – ArcInfo – C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads
File Edit View Go Tools Window Help
Location: C:₩Student₩DESK2₩Exercise02₩Canada.gdb₩Mjrroads
Stylesheet: FGDC ESRI
Contents Preview Metadata
talog
C:₩
COMSOL34
Documents and Settings
Flavio-Simulation
HDRM_Contents
HNC
Intel
Program Files
Python25
RECYCLER
Student
DESK2
Customgeogtran
Exercise02
Canada.gdb
Elev
Mjcities
Mjrroads
Natlpark
PopStats
Province
Water
World.gdb
Areacode.shp
CanadaMap.mx
Elevation.lyr
Geocoding_Res
Parks2006.dbf
Exercise03
Exercise04
Exercise05
Exercise06
Exercise07
Exercise08
Exercise09
Exercise10
Exercise11
Exercise12
Exercise13
Exercise14
Geocoding
projection
DESK3
System Volume Informatic
Temp
WINDOWS
XecureSSL
Canada Highways
File Geodatabase Feature Class
Description
Spatial
Attributes
Details for Mjrroads
Type of object: Feature Class
Number of records: 39629
Description
Attributes
OBJECTID
ObjectID
Shape
NAME
TYPE
HWY_NUM
Shape_Length
KILOMETERS
시작
dave peters building ...
Australian Governme...
ESRI Press - Micros...
http://www.esri.com...
CanadaPopulation - ...
ArcCatalog – Arcl...
빈문서 1 - 한글
오전 10:11
목요일


당신 지금 뭐라고 했어?
아 일단 이거 놔봐