WLIA Standard

GIS Data Exchange Between Wisconsin Public Agencies

Version: December 1996

WLIA Standard 1996-5

Frontispiece

This standard was developed by the Wisconsin Land Information Board GIS Data Interchange Standards Committee, a cooperative standards development effort of the Wisconsin Land Information Board, the Wisconsin Land Information Association, and the Wisconsin Department of Administration. Committee members were:

Diann Danielsen, Chair, Department of Transportation

Loren Hoffmann, Department of Administration

Doug King, Facilitator, WLIB Executive Director

Ted Koch, State Cartographer's Office

Dave Schmidt, Winnebago County

Bill Shaw, Wisconsin Electric Power Co. (formerly City of Milwaukee)

Paul Tessar, Department of Natural Resources

Steve Ventura, University of Wisconsin-Madison

Duane Zeichert, City of Wausau, WLIA representative

The GIS Data Interchange Standards Committee was formed on January 8, 1996, acting as an agent of the Wisconsin Land Information Board. The Committe was charged to:

1) recommend a standard for GIS data interchange among Wisconsin state agencies; and

2) recommend a standard for GIS data interchange among local units of government and Wisconsin state agencies.

In order to accomplish this, the Committee was asked to:

- assess GIS data interchange problems, issues and potential solutions;
- identify the range of candidates for GIS standards;
- evaluate alternative candidates for GIS data interchange standards;
- recommend draft standards; and
- recommend a migration path, schedule, and cost estimates for DOA state agency standard implementation.

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Standard 1996-1

1. Purpose

As the use of geographic information and geographic information systems becomes more widespread, the development of standards guiding the production, use, and transfer of data becomes more critical. The effective use of information and technology is dependent on our ability to share data efficiently without degrading its quality. GIS in particular, is built on the concept of widespread integration and compatibility.

While the benefits of standards may not always be readily apparent, or may even in the short term incur additional cost, standards generally result in overall reduced costs and duplication and easier communication and data sharing.

This standard is designed to facilitate inter-governmental information sharing and communication by assuring the reliable transfer of GIS data between Wisconsin's public agencies.

2. Recommendations

The WLIB GIS Data Interchange Standards Committee recommends that the WLIA:

1. Recognize and adopt the proposed GIS data interchange standard outlined in Section 3 as a means to provide for the sharing of Wisconsin's GIS data.

2. Forward WLIA Standard 1996-1 to the Wisconsin Land Information Board for consideration as a standard of the Wisconsin Land Information Program.

3. Background

The WLIB GIS Data Interchange Standards Committee was formed as a result of Governor Thompson's Executive Order 242: *Statement of Direction on Information Technology*. This order seeks to make broad improvements in Wisconsin's information technology infrastructure. As a result of E.O. 242, several state standards for information technology have been developed, including state agency standards for GIS software.

Because a GIS data interchange standard for Wisconsin public agencies would impact a broad group of state and local governments, DOA asked the WLIB to recommend a set

of standards and solicit public review and comment. The Committee, acting as an agent of the WLIB, was charged to recommend to the WLIB, two standards for GIS data interchange: one applicable to data exchanges between Wisconsin state agencies, and one applicable to data exchanges between state agencies and local governments.

The first standard, entitled *Standard for Arc-format GIS Data Exchange Between State Agencies*, has been forwarded by the WLIB to DOA for approval and implementation. The WLIB has asked the WLIA to conduct public review on the second standard - *Standard for GIS Data Exchange Between Wisconsin Public Agencies* - and make recommendations to the WLIB. It is this public agency standard which is addressed in this document.

4. Standard for GIS Data Exchange Between Wisconsin Public Agencies

Effective GIS data exchange requires a coordinated set of standards, conventions and procedures at a variety of levels. Public Agencies in Wisconsin exchanging GIS data must meet the these requirements. State agencies must also comply with the Wisconsin Department of Administration's *Standard for Arc-Format GIS Data Exchange Between State Agencies.*

For participants in the Wisconsin Land Information Program, this standard represents a minimum requirement for data exchange. However, it does not preclude data exchange by other means where there is mutual agreement.

4.1 Operating System and Media Alternatives

Public Agencies are expected to supply GIS data in at least one of these media types, using one of the relevant recording techniques noted below. If the providing agency has several options available, the requestor should be given a choice wherever practical.

- DOS or Windows 3.x/95/NT: CD ROM, 3.5" diskette, 4 or 8mm tape, or FTP access.
- Unix: 4mm or 8mm tape using the "tar" command (NOT "cpio" or a proprietary format), CD ROM, or FTP access.

4.1.1 Recording Techniques and Standards by Media Type

- CD ROM - ISO 9660 format.
- 3.5" diskette - Standard DOS format. PKZIP data compression is acceptable. The DOS 6.0 or later "BACKUP" command can be used if a file does not fit on a single diskette.

- 4mm tape - R-DAT recording method using DDS (ANSI X3.203) or DDS-2 (ECMA/TC17/92/26).
- 8mm tape - 8200- or 8500-compliant drives are the current standard.

4.1.2 Other Exchange Alternatives

Should the above exchange alternatives be unacceptable to both parties and another alternative is needed, any additional costs associated with conversion shall be borne by the data recipient.

4.2 Coding

7 bit ASCII for text data, 8 bit binary for image data.

4.3 Coordinate Data

Vector data shall be provided in geographic (latitude-longitude) coordinates in decimal degrees referenced to the North American Datum of 1983 (1991). If this is not possible, data referenced to the North American Datum of 1927 is acceptable.

Raster data shall be provided in a planar coordinate system (e.g, Universal Transverse Mercator, Wisconsin Transverse Mercator, State Plane, Wisconsin County Coordinate System) with sufficient metadata to describe the spatial reference system.

4.4 Coordinate Precision

As stored in the source database.

4.5 Data Field Formats

Standard data field formats will be used where applicable (e.g., WLIA/B Parcel Geo-Locator Standard).

4.6 File Format and Data Structure

GIS data will be available for exchange in the native format of the agency's GIS

software, using the standards noted here. Use of recognized data exchange formats such as DXF, DLG or SDTS is encouraged, particularly where there is no loss of data content or structure.

4.7 Data Documentation

Federal Geographic Data Committee (FGDC) consistent metadata is required. If a Wisconsin Profile of the FGDC Content *Standards for Digital Geospatial Metadata* is developed and adopted as a state standard it will become the data documentation requirement of this standard.

4.8 Data Meaning and Content

Future standards will address this topic in detail for each theme, layer or subject area.

5. Helpful Hints for Unix Data Exchange.

Data should be written as a named subdirectory using a relative path (i.e., without a leading slash: "\" or "/").

A blocking factor of 20-512 byte blocks is recommended for tapes.

Tapes should generally be written without hardware compression for transfer.

The command syntax used to write a tape should be supplied to the requestor, and written upon a label affixed to the tape, diskette or CD ROM jewel case.

Remember: All data should be checked and cleaned of viruses before being distributed to others!

Appendix A

Standard for Arc-format GIS Data Exchange
Between State Agencies