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FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATION
(Supersedes FIPS PUB 192—1994 December 7)

APPLICATION PROFILE FOR THE GOVERNMENT INFORMATION LOCATOR SERVICE (GILS)

CATEGORY: SOFTWARE STANDARD

SUBCATEGORY: INFORMATION INTERCHANGE

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Information Technology Laboratory
National Institute of Standards and Technology
Gaithersburg, MD 20899-0001

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Technology Administration
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and Technology
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Foreword

The Federal Information Processing Standards Publication Series of the National Institute of Standards and Technology (NIST) is the official publication relating to standards and guidelines adopted and promulgated under the provisions of Section 5131 of the Information Technology Management Reform Act of 1996, and the Computer Security Act of 1987, Public Law 104-106. Under these mandates, the Secretary of Commerce promulgates standards and guidelines pertaining to the efficiency, security, and privacy of Federal computer systems. The National Institute of Standards and Technology through its Information Technology Laboratory has the mission of developing standards, guidelines, and associated methods and techniques for computer systems, and providing technical assistance to industry and government in the implementation of standards.

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Shukri A. Wakid, Director
Information Technology Laboratory

Abstract

This standard describes the United States Federal Government use of the international application profile for the Government Information Locator Service (GILS), also known as the Global Information Locator Service. The GILS Profile is based primarily on ISO 23950, presently equivalent to the American National Standard for Information Retrieval Application Service Definition and Protocol Specification for Open Systems Interconnection (ANSI/NISO Z39.50-1995/Version 2), developed by the National Information Standards Organization (NISO), and formerly analogous to the international ISO Search and Retrieve protocol ISO 10162, 10163.

Key words: client; Federal Information Processing Standards Publication (FIPS PUB); government information; Government Information Locator Service (GILS); information retrieval; locator record; profile; server.

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**Federal Information
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Announcing the Standard for

**APPLICATION PROFILE FOR THE GOVERNMENT INFORMATION
LOCATOR SERVICE (GILS)**

Federal Information Processing Standards Publications (FIPS PUBS) are issued by the National Institute of Standards and Technology (NIST) after approval by the Secretary of Commerce pursuant to Section 5131 of the Information Technology Management Reform Act of 1996, and the Computer Security Act of 1987, Public Law 104-106.

1. Name of Standard. Application Profile for the Government Information Locator Service (GILS) (FIPS PUB 192-1).

2. Category of Standard. Software Standard, Information Interchange.

3. Explanation. This standard describes the United States Federal Government use of the international application profile for the Government Information Locator Service (GILS), also known as the Global Information Locator Service. The GILS Profile is based primarily on ISO 23950, presently equivalent to the American National Standard for Information Retrieval Application Service Definition and Protocol Specification for Open Systems Interconnection (ANSI/NISO Z39.50-1995/Version 2), developed by the National Information Standards Organization (NISO), and formerly analogous to the international ISO Search and Retrieve protocol ISO 10162, 10163.

The U.S. Federal GILS is a decentralized collection of servers and associated information services used by the public either directly or through intermediaries to find public information throughout the Federal government. The GILS Profile specifies the use of ISO 23950 in information service applications and provides specifications for the GILS application.

The GILS Profile enables GILS-aware client systems to interconnect and to interoperate with any GILS-compliant server. The profile addresses intersystem interactions and information interchange, but does not specify user interface requirements, the internal structure of databases that contain Locator Records, or search engine functionality.

GILS-compliant servers will support search and retrieval by accepting a search query and returning a result set or diagnostic messages. GILS-compliant servers may also support browsing by accepting a well-known search query and returning a list of Locator Records in brief display format.

Some of the information resources pointed to by GILS Locator Records, as well as the GILS-compliant server itself, may be available electronically through other communications protocols including the common Internet protocols that facilitate electronic information transfer such as remote login (Telnet), File Transfer Protocol (FTP), and electronic mail. The use of SMTP and MIME protocols or other communications paths is outside the scope of the GILS Profile.

The GILS Profile was initially developed by a group of industry and government experts in ANSI/NISO Z39.50 implementations, system implementations, and the organization of information. The specifications included in the currently approved Version 2 of the GILS Profile reflect the consensus of that group and input from a range of stakeholders, coordinated through the Open Systems Environment Implementors Workshop, Special Interest Group on GILS.

FIPS PUB 192-1 supersedes FIPS PUB 192 in its entirety. It contains editorial changes, updated references to documents and organizations, and technical updates to the GILS Profile.

4. Approving Authority. Secretary of Commerce.

5. Maintenance Agency. U.S. Department of the Interior, United States Geological Survey (USGS).

Questions concerning this standard are to be addressed to the Maintenance Agency: GILS Program, United States Geological Survey (USGS), 802 National Center, Reston, VA 20192. Users of this standard who need to be notified of changes that occur prior to the next publication of the standard should complete the Change Request Form provided in this publication and send it to: Standards Processing Coordinator (ADP), Information Technology Laboratory, National Institute of Standards and Technology, Gaithersburg, MD 20899. The NIST will issue Change Notices on an as-needed basis.

6. Related Documents.

a. Federal Information Resources Management Regulations subpart 201-20.303, Standards and subpart 201-39-1002, Federal Standards.

b. Office of Management and Budget 95-01, Establishment of Government Information Locator Service.

c. American National Standard for Information Retrieval Application Service Definition and Protocol Specification for Open Systems Interconnection (ANSI/NISO Z39.50- 1995/Version 2).

d. A list of additional references for the Application Profile is contained in section 5, References, of the specifications.

7. Objectives. The objectives of the Application Profile for the GILS are to:

- enable users to identify, locate, and access or acquire publicly available Federal information resources, including electronic information resources.
- provide a uniform approach to providing information locator services to the public.
- enable every agency to establish standards-based network-accessible locator records.

8. Applicability.

a. This standard is recommended for use by Federal agencies in the development and establishment of information locators, i.e., information resources that identify other information resources, describe the information available in those resources, and provide assistance in how to obtain the information.

b. This standard is required for use by Federal agencies in those information locators that are established and maintained as part of the Government Information Locator Service (GILS) pursuant to the requirements of 44 USC 3511 and other applicable, law, regulation, and policy.

9. Specifications. The Application Profile for the Government Information Locator Service, (affixed).

10. Implementation. The implementation of this standard involves three areas of consideration: development and acquisition of GILS implementations, validation, and interpretations of the standard.

10.1 Development and Acquisition of GILS Implementations. This standard became effective June 30, 1995.

10.2 Validation. Validation of GILS implementations is not required at this time. Testing for conformance to this standard is at the discretion of the agency. Agencies may select the tests to be administered and the testing organizations that administer the tests.

10.3 Interpretation of this Standard. Resolution of questions regarding this standard will be provided by USGS/GILS Development Group. Questions concerning the content and specifications should be addressed to:

USGS/GILS Development Group
United States Geological Survey (USGS)
802 National Center
Reston, VA 20192
Telephone: (703) 648-7245
E-mail: echristi@usgs.gov

11. Waivers. Under certain exceptional circumstances, the heads of Federal departments and agencies may approve waivers to Federal Information Processing Standards (FIPS). The head of such agency may redelegate such authority only to a Chief Information Officer designated pursuant to Section 3506(b) of Title 44, U.S. Code. Waivers shall be granted only when:

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- b. Cause a major adverse financial impact on the operator which is not offset by Governmentwide savings.

Agency heads may act upon a written waiver request containing the information detailed above. Agency heads may also act without a written waiver request when they determine that conditions for meeting the standard cannot be met. Agency heads may approve waivers only by a written decision which explains the basis on which the agency head made the required finding(s). A copy of each such decision, with procurement sensitive or classified portions clearly identified, shall be sent to: National Institute of Standards and Technology; Attn: FIPS Waiver Decisions, Technology Building, Room A216, Gaithersburg, MD 20899.

In addition, notice of each waiver granted and each delegation of authority to approve waivers shall be sent promptly to Congress and shall be published promptly in the *Federal Register*.

When the determination on a waiver applies to the procurement of equipment and/or services, a notice of the waiver determination must be published in the *Commerce Business Daily* as part of the notice of solicitation for offers of an acquisition or, if the waiver determination is made after that notice is published, by amendment to such notice.

A copy of the waiver, any supporting documents, the document approving the waiver and any supporting and accompanying documents, with such deletions as the agency is authorized and decides to make under 5 U.S.C. Sec. 552(b), shall be part of the procurement documentation and retained by the agency.

12. Where to Obtain Copies. Copies of this publication are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

(Sale of the included specifications document is by arrangement with the United States Geological Survey (USGS).) When ordering, refer to Federal Information Processing Standards Publication 192-1 (FIPSPUB192-1), and title. Payment may be made by check, money order, or deposit account.

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Specifications for

**APPLICATION PROFILE FOR THE GOVERNMENT INFORMATION
LOCATOR SERVICE (GILS)**

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Specifications for

**APPLICATION PROFILE FOR THE GOVERNMENT INFORMATION
LOCATOR SERVICE (GILS)**

1. INTRODUCTION

This document describes an application profile for the Government Information Locator Service (GILS). The GILS Profile includes not only the specifications for ANSI/NISO Z39.50, the American National Standard for Information Retrieval Application Service Definition and Protocol Specification for Open Systems Interconnection (National Information Standards Organization, 1995) in the application but also other aspects of a GILS conformant server that are outside the scope of Z39.50. The GILS Profile provides the specifications for the overall GILS application relating to the GILS Core, which is a subset of all GILS Locator Records, and completely specifies the use of Z39.50 in this application.

2. BACKGROUND

The GILS is a response to the need for users to identify, locate, and access or acquire publicly available Federal information resources, including electronic information resources. Christian (1994) is the authoritative document providing an overview of GILS, its objectives, service requirements, and core requirements. According to Christian (1994), the GILS is an overall service and includes information and technology components as well as policy, regulation, people, etc. The GILS is intended to help the public locate and access public information.

The current GILS initiative builds upon a previous study, *Identifying and Describing Federal Information Inventory/Locator Systems: Design for Networked-Based Locators* (McClure, Ryan & Moen, 1992). That study, which was conducted for the Office of Management and Budget, the National Archives and Records Administration, and the General Services Administration, recommended that each agency establish a network-accessible locator that describes its information resources. The study also recommended that agencies use Z39.50 as the appropriate information retrieval protocol to achieve a distributed, standards-based Government Information Locator Service.

The development of the GILS Profile is documented in *Using Z39.50 in an Application for the Government Information Locator Service (GILS)* (McClure & Moen, 1994). The GILS Profile resulted from the work of a group comprising experts in Z39.50 implementations, system implementations, and information organization, and representatives of Federal agencies. The specifications included in the GILS Profile reflect the consensus of this group and input from a range of stakeholders.

3. SCOPE

The GILS Profile fully specifies the use of ANSI/NISO Z39.50 by the GILS. In addition, the GILS Profile provides the specifications for the overall GILS application relating to the GILS Core including other aspects of GILS conformant servers that are outside the scope of Z39.50.

This version of the GILS Profile focuses on requirements for a GILS server operating in the Internet environment. GILS clients will be able to interconnect with any GILS server, and these clients will behave in a manner that allows interoperability with the GILS server. Clients that support Z39.50 but do not implement the GILS Profile will be able to access GILS records with less than full GILS functionality.

The GILS Profile addresses many aspects of the GILS (e.g., intersystem interactions and information interchange) but does not specify user interface requirements, the internal structure of databases that contain GILS Locator Records, or search engine functionality.

4. FIELD OF APPLICATION

The GILS Profile supports search and retrieval of GILS Locator Records contained in GILS servers by users in the Internet environment.

The GILS Profile will be used by developers of GILS servers. It will also be used by client developers to understand expected behaviors of GILS servers. A GILS server accessed using Z39.50 in the Internet environment acts primarily as a pointer to information resources. Some of these information resources pointed to by GILS Locator Records, as well as the GILS server itself, may be available electronically through other communications protocols including the common Internet protocols that facilitate electronic information transfer such as remote login (Telnet), File Transfer Protocol (FTP), and electronic mail (SMTP/MIME). The use of these protocols or other communications paths is outside the scope of the GILS Profile.

Once connected to a GILS server, users supported by appropriate clients that understand the GILS Profile may navigate through single or multiple servers. GILS servers will support searching (i.e., accept a search query and return a result set or diagnostic messages) and may support browsing (i.e., accept a well-known search query and return a list of Locator Records in brief display format). Although the GILS Profile addresses GILS servers only, it is understood that clients have roles in the execution of these activities (e.g., browsing is also a client function in the sense of how it interprets and presents GILS data).

5. REFERENCES

The following list contains documents that contain provisions which, through reference in this text, constitute provisions of the GILS Profile. At the time of this publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this Profile are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by the Profile to such documents, is that they may be specific to a particular edition. In addition, this list contains other documents that can be consulted for further information, background, etc.

- [1] American National Standards Institute. (1985). *American National Standard Z39.2-1985 Bibliographic Information Interchange*. New York: American National Standards Institute.
- [2] Christian, Eliot. (1994, April 26). *Government Information Locator Service (GILS)*: Available on the Fedworld electronic bulletin board (703-321-8020) or by anonymous FTP (File Transfer Protocol) via the Internet at 130.11.48.107 as /pub/gils.doc (Microsoft Word for Windows format) or /pub/gils.txt (ASCII text format). See also <<http://www.usgs.gov/gils>>
- [3] McClure, Charles R. & Moen, William E. (1994, May 7) *Using Z39.50 in an Application for the Government Information Locator Service (GILS)*. Available <<ftp://ftp.cni.org/pub/gils/profile/background.doc.txt>> or <<ftp://ftp.cni.org/pub/gils/profile/background.doc.ps>>
- [4] McClure, Charles R., Ryan, Joe & Moen, William E. Moen. (1992). *Identifying and Describing Federal Information Inventory/Locator Systems: Design for Networked-Based Locators*. 2 Vols. Bethesda, MD: National Audio Visual Center [Available from ERIC, document no. ED349031].

- [5] *ANSI/NISO Z39.50-1995, Information Retrieval (Z39.50): Application Service Definition and Protocol Specification*. [For availability, see <http://lcweb.loc.gov/z3950/agency>]
- [6] National Institute of Standards and Technology. (1992). FIPS No. 173, Spatial Data Transfer Standard (August 28, 1992). Gaithersburg, MD: National Institute of Standards and Technology.
- [7] Office of Management and Budget. (1993). Circular No. A-130, "Management of Federal Information Resources" (58 *F.R.* 36068, July 2, 1993).
- [8] RFC 1729, Using Z39.50-1992 Directly over TCP. Available <<ftp://ftp.loc.gov/pub/z3950/profiles/tcp.txt>>
- [9] RFC 1521, MIME (Multipurpose Internet Mail Extensions) Part One: Mechanisms for Specifying and Describing the Format of Internet Message Bodies.
- [10] RFC 1522, MIME (Multipurpose Internet Mail Extensions) Part Two: Message Header Extensions for Non-ASCII Text.
- [11] Uniform Resource Locators (URL): A Unifying Syntax for the Expression of Names and Addresses of Objects on the Network. (October 1993). [Internet Draft]. The latest URL draft is: <<ftp://info.cern.ch/pub/www/doc/url7a.txt>>
- [12] Uniform Resource Names. (1993, October). [Internet Draft]. The latest URN draft is: <<ftp://ds.internic.net/internet-drafts/draft-ietf-uri-resource-names-01.txt>>
- [13] *USMARC Format for Bibliographic Data*. Washington, DC: Library of Congress, Cataloging Distribution Service.

6. DEFINITIONS

For purposes of this Profile, the following definitions apply.

Client: An initiating application. This application includes the Z39.50 origin.

Electronic Information Resource: Information resources that are maintained in electronic, digital format and may be accessed, searched, or retrieved via electronic networks or other electronic data processing technologies (e.g., CD-ROM).

GILS Core Elements: Certain elements and their usual structure are defined as part of the GILS Application Profile, although guidelines on customary usage may be published separately. In addition to the well-known GILS Core elements, GILS locator records may contain any number of locally-defined elements or elements that are well-known in the context of other Z39.50 profiles.

Government Information Locator Service (GILS): A decentralized collection of locators and associated information services used by the public either directly or through intermediaries to find information.

Information Resource: Includes both information and information technology.

Interoperability: A condition that exists when the distinctions between information systems are not a barrier to accomplishing a task that spans multiple systems.

Locator Record: A collection of related data elements describing an information resource, the information available in the resource, and how to obtain the information.

Origin: The part of a client application that initiates a Z39.50 association and is the source of requests during the association.

Profile: The statement of a function(s) and the environment within which it is used, in terms of a set of one or more standards, and where applicable, identification of chosen classes, subsets, options, and parameters of those standards. A set of implementor agreements providing guidance in applying a standard interoperably in a specific limited context.

Registered Object: An object that is identified by a name-to-thing relationship in which the name is recorded by a registration authority to ensure that the names can be used unambiguously.

Server: An application that responds to an initiating application (i.e., a client). The application that includes the Z39.50 target.

Target: The part of a server application that accepts a Z39.50 association.

Uniform Resource Identifier (URI): A set of related standards for encoding resource location and identification information for electronic and other objects. Examples include Uniform Resource Locators (URLs) and Uniform Resource Names (URNs).

USMARC: An implementation of ANSI/NISO Z39.2, the American National Standard for Bibliographic Information Interchange. The USMARC format documents contain the definitions and content designators for the fields that are to be carried in records structured according to Z39.2. GILS records in USMARC format contain fields defined in *USMARC Format for Bibliographic Data*. This documentation is published by the Library of Congress.

7. Z39.50 SPECIFICATIONS FOR GILS

This section details the required services available from Z39.50, describes an Attribute Set for searching, Element Set Names by which the server presents some or all the elements (defined in the Schema) of the Locator Records, and prescribes the Record Syntaxes to be supported by GILS servers for the transfer of Locator Records.

7.1. Version

GILS clients and servers support Z39.50 Version 2 as specified in Z39.50-1995. GILS requires support of various objects, listed in 7.2.

7.2. GILS Objects

The following object identifier (OID) is assigned to the Z39.50 standard:

{iso (1) member-body (2) US (840) ANSI-standard-Z39.50 (10003)}.

This OID is abbreviated as: ANSI-standard-Z39.50.

Several object classes are assigned at the level immediately subordinate to ANSI-standard-Z39.50, including:

- 3 = attribute set definitions
- 4 = diagnostic definitions
- 5 = record syntax definitions
- 13 = database schema definitions.
- 14 = tagSet definitions.

GILS requires support of the following objects

- GILS attribute set: {ANSI-standard-Z39.50 3 5}
- bib1 diagnostic set: {ANSI-standard-Z39.50 4 1}
- USMARC record syntax: {ANSI-standard-Z39.50 5 10}
- SUTRS record syntax: {ANSI-standard-Z39.50 5 101}
- GRS-1 record syntax: {ANSI-standard-Z39.50 5 105}
- GILS schema: {ANSI-standard-Z39.50 13 2}
- tagSet-M {ANSI-standard-Z39.50 14 1}
- tagSet-G {ANSI-standard-Z39.50 14 2}.

The tagSet OID for the tagSet is 1.2.840.10003.14.4.

7.3. Communication Services

When Transmission Control Protocol (TCP) is used as the transport service, the specification for use of TCP is found in RFC 1729 "Using Z39.50-1992 Directly over TCP." The use of other communication services is not yet defined.

7.4. Z39.50 Services

There are three Z39.50 (Version 2) services that are required for conformance: Init, Search, and Present. No additional services are required for conformance to the GILS Profile. Other Z39.50 services, however, may be provided optionally by servers and used by clients.

Standard Z39.50 Init Service negotiation procedures control the use of all services.

7.4.1. Search

The GILS application will support Z39.50 Type 1 queries which are general purpose Boolean query structures.

7.4.1.1. Attribute Set

The GILS Attribute Set is a superset of the Bib-1 Attribute set and consists of all Bib-1 Attributes and additional Use Attributes that are defined for GILS elements (see Annex A). The newly defined GILS Use Attributes are well-known and correspond semantically to GILS Core Elements. The GILS Attribute Set is a registered object.

GILS servers must support a limited number of Use Attributes, as follows. (Note: The Use Attribute name is listed followed by the Use Attribute number and the corresponding GILS Element):

- Use Attributes: Title (4, Title); Local Number (12; Local Control Number); Author-name corporate (1005; Originator); Date/Time Last Modified (1012; Date of Last Modification); Record Source (1019; Record Source); Distributor Name (2001; Distributor Name); Subject Terms Controlled (2002; Subject Terms Controlled); Local Subject Index (29; Subject Terms Uncontrolled); Any (1016), Anywhere (1035)
- Structure Attributes: Word (2), URx (104), Date (5), Word List (6)
- Relation Attributes: Less Than (1), Less Than or Equal (2), Equal (3), Greater than or Equal (4), Greater Than (5), Not Equal (6).

GILS servers should never return any of these four diagnostic messages: “Unsupported Use Attribute,” “Unsupported Structure Attribute,” “Unsupported Relation Attribute,” or “Unsupported Attribute Type” when a query includes the combinations of required GILS Attributes listed in Annex A.

GILS servers may optionally support a spatial search. For this purpose, the following attributes are available:

- Use Attributes: West Bounding Coordinate (2038); East Bounding Coordinate (2039); North Bounding Coordinate (2040); South Bounding Coordinate (2041)
- Structure Attribute: Coordinate (200)

A server may support many different sets of records, only some of which might include some of the GILS Core Elements. When a query includes a Use Attribute which does not occur in the particular set of records to be searched, the server should not fail the search but should locate no records for that Use Attribute.

7.4.1.2. Well-Known Search

To provide support for browsing GILS Locator Records, there is a well-known search consisting of the following GILS Attributes: Use Attribute: Local Number; Structure Attribute: URX; and a term of zero length. GILS servers that support browsing of records will create a result set of one or more GILS Locator Records that provide the necessary information to allow clients to offer menu-like displays of GILS Locator Records or other information and information resources.

The “Browse” in the GILS context involves only the Search and Present Services of Z39.50. “Browse” is used informally in the GILS Profile, and it is not related nor should it be confused with the Browse Facility or Scan Service of Z39.50.

7.4.2. Retrieval

This section describes the components and procedures used by Z39.50 to return records in response to a query.

7.4.2.1. Schema

The GILS Profile specifies a GILS Schema (see Annex D for the Schema). The GILS Schema is a registered object. The schema describes and/or defines tagSets used and an abstract record structure for a Locator Record. A schema in Z39.50 can be modified and may evolve over time, and it is reasonable to expect the GILS Schema will evolve.

The GILS Schema uses elements from tagSet-M and tagSet-G and defines in the GILS tagSet additional elements as necessary. The GILS Profile specifies tagTypes to identify tagSet-M elements (tagType = 1), tagSet-G elements (tagType = 2), and the elements defined by the GILS tagSet (tagType = 4). Another tagType (tagType = 3) is used to identify arbitrary string tags for locally defined elements.

The GILS tagSet element numbering begins with number 1. Elements can be nested and the tagging notation (i.e., the tag path) will reflect the nesting.

All well-known GILS Schema elements have assigned numeric tags. String-tags (i.e., text) may be used in the GILS Schema to label those elements that are not well-known (i.e., locally defined).

7.4.2.2. Element Sets Names

GILS servers will support Element Set Names. GILS servers will interpret the use of the Element Set Names required by the GILS Profile to identify the following elements from the GILS Schema:

- The primitive element set name “G” contains at least Title, Control Identifier, Originator, Local Control Number and Cross Reference
- Support for primitive element set name “F”, is required by the Z39.50 standard, however, its usage is not addressed by this profile, and its use, within this profile, is discouraged.

The server should include in a retrieved record all of the elements specified by the element set name for which there is data available in the database record and which can be encoded in the requested record syntax (e.g., some types of locally defined binary data may not be encodable in a USMARC or SUTRS record).

7.4.2.3. Record Syntaxes

GILS servers are required to support the following three record syntaxes:

- USMARC—an implementation of ANSI/NISO Z39.2 and maintained by the Library of Congress
- Generic Record Syntax (GRS-1)—defined in Z39.50
- Simple Unstructured Text Record Syntax (SUTRS)—defined in Z39.50.

Annex B contains a mapping of Core Elements to USMARC for use in the USMARC record syntax. However, since the data transformation is not fully reversible and requires interpretation, the record source is responsible for encoding the USMARC record(s).

The data in GILS Locator Records do not always map clearly into USMARC records, particularly when agencies add their own locally defined fields to the GILS Locator Record. This means that construction of USMARC records is subject to local interpretation. Therefore, GILS Locator Records in USMARC format obtained from other than the original record source should be considered non-definitive. The original source of the GILS Locator Record can be identified by examining the Original Control Identifier field of the record.

For interchange, GRS-1 records are to be treated as the complete and canonical representation; SUTRS and USMARC should be viewed as derivative records from these canonical representations and as such are not as complete or precise.

7.5. Preferred Display Format for Use with SUTRS

The GILS Profile recommends a preferred display format for SUTRS records (see Annex C for the recommended display format). For the SUTRS records, formatting instructions for a preferred display format is a concern of the server.

When the target transfers a GILS record using the SUTRS record syntax, it will encode the GILS record formatted according to the preferred display format, so that the client may present the record directly, without processing. For SUTRS, however, the client should not expect to be able to parse the record to obtain any individual GILS elements.

When the client presents a GILS record formatted by the server using the USMARC or GRS record syntax, it is recommended that the client consider the SUTRS suggested display layout in formatting the received record for presentation to the human end user.

7.6. Diagnostic Messages

The GILS application will use Diagnostic Set Bib-1.

8. DATA ELEMENTS IN THE LOCATOR RECORD

GILS Locator Records consist of a number of GILS Core Elements that contain information to identify and describe Federal information resources. The GILS Core Elements are defined in Annex E.

ANNEX A—ATTRIBUTES

Recognized and Supported Combinations of GILS Attributes

<i>USE ATTRIBUTE</i>	<i>STRUCTURE ATTRIBUTES</i>	<i>RELATION ATTRIBUTES</i>
Title	Word, Word List	Equal
Local Number	Word, Word List	Equal
Author-name corporate	Word, Word List	Equal
Date/Time Last Modified	Date	Greater Than, Equal
Record Source	Word, Word List	Equal
Distributor Name	Word, Word List	Equal
Index Term— Controlled	Word, Word List	Equal
Local Subject Index	Word, Word List	Equal
Any	Word, Word List	Equal
Anywhere	Word, Word List	Equal
West Bounding Coordinate	Coordinate	Less Than, Less Than or Equal, Equal, Greater Than or Equal, Greater Than, Not Equal
East Bounding Coordinate	Coordinate	Less Than, Less Than or Equal, Equal, Greater Than or Equal, Greater Than, Not Equal
North Bounding Coordinate	Coordinate	Less Than, Less Than or Equal, Equal, Greater Than or Equal, Greater Than, Not Equal
South Bounding Coordinate	Coordinate	Less Than, Less Than or Equal, Equal, Greater Than or Equal, Greater Than, Not Equal

As stated in 7.3.1.1, GILS servers are required to support a minimal set of Use Attributes. These are listed first. In the cases where a Bib-1 use Attribute's Name is used, the corresponding GILS Core Element name appears in parentheses.

Required GILS Use Attributes

<u>Use #</u>	<u>GILS Attribute Name</u>
4	Title
12	Local Number (Local Control Number)
29	Local Subject Index (Subject Terms Uncontrolled)
1005	Author-name Corporate (Originator)
1012	Date/Time Last Modified (Date of Last Modification)
1016	Any
1019	Record Source
1035	Anywhere
2001	Distributor Name
2002	Index Terms—Controlled (Subject Terms Controlled)

Available GILS Use Attributes

<u>Use #</u>	<u>GILS Attribute Name</u>
31	Date of Publication
54	Code-language (Language of Resource)
59	Place Publication (Place of Publication)
62	Abstract
1003	Author (Contributor)
1007	Identifier-Standard (Control Identifier)
1031	Material-type (Medium)
2000	Distributor
2003	Purpose
2004	General Access Constraints
2005	Use Constraints
2006	Distributor Organization
2007	Distributor Street Address
2008	Distributor City
2009	Distributor State or Province
2010	Distributor Zip or Postal Code
2011	Distributor Country
2012	Distributor Network Address
2013	Distributor Hours of Service
2014	Distributor Telephone
2015	Distributor Fax
2016	Resource Description
2017	Order Information
2018	Technical Prerequisites
2019	Available Time Structured
2020	Available Time Textual

Available GILS Use Attributes—Continued

<u>Use #</u>	<u>GILS Attribute Name</u>
2021	Linkage
2022	Linkage Type
2023	Contact Name
2024	Contact Organization
2025	Contact Street Address
2026	Contact City
2027	Contact State or Province
2028	Contact Zip or Postal Code
2029	Contact Country
2030	Contact Network Address
2031	Contact Hours of Service
2032	Contact Telephone
2033	Contact Fax
2034	Agency Program
2035	Sources of Data
2036	Subject Thesaurus
2037	Methodology
2038	West Bounding Coordinate
2039	East Bounding Coordinate
2040	North Bounding Coordinate
2041	South Bounding Coordinate
2042	Place Keyword
2043	Place Keyword Thesaurus
2044	Time Period Structured
2045	Time Period Textual
2046	Cross Reference Title
2047	Cross Reference Linkage
2048	Cross Reference Type
2049	Original Control Identifier
2050	Supplemental Information
2051	Record Review Date
2052	Originator Dissemination Control
2053	Security Classification Control
2054	Cost
2055	Cost Information
2056	Schedule Number
2057	Controlled Subject Index
2058	Uncontrolled Term
2059	Spatial Domain
2060	Bounding Coordinates

Available GILS Use Attributes—Continued

<u>Use #</u>	<u>GILS Attribute Name</u>
2061	Place
2062	Time Period
2063	Availability
2064	Order Process
2065	Available Time Period
2066	Access Constraints
2067	Point of Contact
2068	Cross Reference
2069	Available Linkage
2070	Cross Reference Relationship
2071	Language of Record
2072	Beginning Date
2073	Ending Date
2074	Controlled Term

ANNEX B—GILS CORE ELEMENT TO USMARC MAPPING

This Annex provides a mapping from GILS Core Elements to USMARC for use by GILS servers. Some of these data elements consist of two or more subelements, and this relationship is noted by the indentation.

Implementors should consult the authoritative documentation on USMARC found in *USMARC Format for Bibliographic Data*. The document is available from the Cataloging Distribution Service at the Library of Congress. A full description of the USMARC fields and available subfields within each field is in that document.

In addition to the variable length fields listed in the mapping, a USMARC record will also include a Leader and field 008: Fixed-Length Data Elements. Certain character positions in each of these fixed length fields of a USMARC record will need to be coded specifically for GILS, although most will generate default values. The following describes these fixed fields and suggests values for them (or parts of them):

Leader: A fixed field comprising the first 24 character positions (00–23) of each record that provides information for the processing of the record. For GILS records, the following character positions are specifically relevant:

Character Position: 06—Type of record

- If resource is an electronic information resource, use code “m”
- If resource is geospatial, use code “e”
- All others use code “a”

Character Position 18: Descriptive cataloging form

- Use Value: #[i.e., blank] (Non-ISBD) to indicate when International Standard Bibliographic Description is not followed.

008 Fixed Length Data Elements: Forty character positions (00–39) containing positionally-defined data elements that provide coded information about the record as a whole or about special bibliographic aspects of the item being cataloged. For GILS records, the following character positions are used:

Character positions 00–55: Date the USMARC record was created or converted from a GILS record (formatted as YYMMDD)

Character positions 07–10: Date of Publication (YYYY portion from Date Of Publication Structured)

Other character positions can default to fill characters (ASCII 7C)

042\$a Authentication Code

Value:
gils

GILS Data Elements and Corresponding USMARC Tags

<u>GILS Data Element</u>	<u>USMARC Tag</u>
Title	245\$a
Originator	720\$a with \$e=author
Contributor	720\$a
Date of Publication	260\$c
Place of Publication	260\$a
Language of Resource	041\$a
Abstract	520\$a
Controlled Subject Index	
Subject Thesaurus	650 1st indicator/ 650\$2
Subject Terms Controlled	
Controlled Term	650\$a
Subject Terms Uncontrolled	
Uncontrolled Term	653\$a
Spatial Domain	
Bounding Coordinates	255\$c
West Bounding Coordinate	034\$d
East Bounding Coordinate	034\$e
North Bounding Coordinate	034\$f
South Bounding Coordinate	034\$g
Place	
Place Keyword Thesaurus	651\$2
Place Keyword	651\$a
Time Period	
Time Period Structured	045\$b
Time Period Textual	513\$b
Availability	
Medium	655\$a with \$2=local
Distributor	if no subfields 260\$b, otherwise 270 1st indicator = 1
Distributor Name	270\$p
Distributor Organization	270\$q
Distributor Street Address	270\$a
Distributor City	270\$b
Distributor State or Province	270\$c
Distributor Zip or Postal Code	270\$e
Distributor Country	270\$d
Distributor Network Address	270\$m
Distributor Hours of Service	270\$r
Distributor Telephone	270\$k
Distributor Fax	270\$l
Resource Description	037\$f
Order Process	037\$n
Order Information	037\$n
Cost	037\$c