Global Information Locator Service (GILS) Making it Easier to Search for Information

Although the global information revolution continues to make ever more information potentially accessible, people do not have adequate facilities for finding relevant information resources, whether represented on the Internet or in other media. The Global Information Locator Service (GILS) specifies a standard Profile for information search. This standard is a particular use of existing international standards developed primarily in the library and information services communities and used worldwide in client-server Internet applications. While it leverages common practice, the GILS Profile does not specify how servers manage records or how clients use records. It merely specifies how servers converse with clients during a simple search session.

Infrastructure for the Global Information Society.
There are many ways to help people find information, but some are better to enhance the free flow of information. For example, the design of GILS avoids having a central authority or other fixed relationships. Simply by adopting GILS, all kinds of people and organizations worldwide can independently offer all kinds of locators that are searchable directly or through intermediaries. Content providers use GILS to describe their information in their own way. Intermediaries exploit GILS to simplify the gathering of information, with a higher confidence level and without constantly adapting to changes by information providers. Searchers can use GILS to search intermediaries or content providers directly using the searcher's own language and choice of features. (For†an overview of policy and technology considerations underlying GILS, see "Experiences with Information Locator Services" athttp://www.gils.net/experiences.html.)

What is the Standard for Information Searching?
The international standard for information search is ISO 23950 (also known as Z39.50). The standard supports full-text search but also supports complex bibliographic collections based on MARC (Machine Readable Cataloging) and new techniques such as spatial search, natural language processing, and abstract pattern matching. Working with the international search standard and MARC systems, GILS leverages vast amounts of valuable bibliographic resources in libraries, museums, and archives. In so doing, GILS takes advantage of the skills of millions of catalogers and untold numbers of searchers worldwide.

Including, but not limited to, Electronic.
In addition to bibliographic resources, content providers can describe data sets and virtually any information resource with GILS, including projects, services, events, meetings, artifacts, organizations, expertise, and so on. Of course, such resources are often not available on networks, nor even electronic. In those cases where the information is online, GILS supports "hyperlinks" for network access to the resource described or to related resources. To reach audiences not online, intermediaries compile, edit, translate, and present information from the network into other appropriate media. A printed catalog, newsletter, telephone referral service, or face-to-face contact may the best media for helping people find information that is also searchable online via GILS.

Example Implementations:

- (GILS can be applied to all sectors where people communicate, but there is a special urgency to the worldwide sharing of environmental information. The Environment and Natural Resources Management project, part of the G7 Global Information Society, has built consensus on the Global Information Locator Service to enhance access and use of data and information about the Earth. (see http://ceo.gelos.org/). Other international systems are following this lead, including the U.N. Framework Convention on Climate Change and the U.N. Convention on Biological Diversity.
- (United States law (44 USC 3511, Paperwork Reduction Act of 1995) and policy (OMB Memorandum 98-5) establish a Government Information Locator Service at the Federal level. Adoption of this approach by other nations, regional organizations, and state governments is well underway. (see http://www.gils.net/).
- (The Geospatial Data Clearinghouse, part of the U.S. National Spatial Data Infrastructure, builds on GILS and provides more precise searching for maps and other data referenced to places on the Earth. (see http://fgdclearhs.er.usgs.gov/). Many other national and international systems also follow this elaboration of the GILS Profile. Examples include: the National Biological Information Infrastructure, the International Directory Network of the Committee on Earth Observing Satellites, the Global Change Data and Information System, and the National Environmental Data Index.
- (The Advanced Search Facility, with freeware for integrating GILS with "Web crawling" is described at http://asf.gils.net/.
- (Searchers can access many Internet resources using GILS. A sample list of over 750 primary content providers and

intermediaries accessible on the Internet without charge or other access constraints, see http://www.gils.net/list/.

- (A brief overview of the advantages of GILS is provided through examples at http://www.gils.net/showcase/.

Frequently Asked Questions about GILS

Doesn't GILS duplicate what Web search engines accomplish more easily?
No, GILS and Web search engines are complementary in some respects but not quite the same idea. In common usage, the term "Web†search engines" encompasses two distinct processes. One process is the compiling of an index to Web resources by "crawling" along hypertext links or traversing FTP directories. GILS implementations use many ways to compile information resources, and many implementations include Web crawlers. (The GILS Profile does not constrain how compilation is done.) The other process used by Web search engines involves a Web user interface with various features that permit searching of the compiled index. Although GILS does not address user interfaces, search features do relate to GILS. GILS compliance is already available for the Alta Vista and Fulcrum search engines, for example.

What are the typical components of a GILS implementation?
The base of a GILS implementation is information content. For people to find information resources, there must be a selection process by which information content is included and excluded (a "collection policy"), as well as a process to characterize each resource for searching (a "usage guideline"). The GILS Profile itself provides a common set of bibliographic and metadata search attributes (Title, Author, Subject, Date of Publication, Spatial Domain, etc.). A GILS-compliant server has a precisely defined set of operations for search and retrieval, including recognition of these common search attributes. Compliance with the GILS Profile assures interoperability over a broad spectrum of collections policies and usage guidelines.

How much does it cost to put up a GILS-compliant server?
Freeware implementations of GILS are available (for example, see the Advanced Search Facility at (http://asf.gils.net/). Of course, freeware may be more difficult to administer, may have minimal documentation, and typically does not have formal support. Commercial GILS-compliant software starts at about $6,000 for a small Alta Vista implementation. Additional options are available for: sophisticated database support such as Informix; Intranet knowledge management such as Fulcrum; or library support with products such as SIRSI and OCLC FirstSearch. (for company contacts see http://www.gils.net/contacts.html)

How does GILS relate to the MARC standard?
The Machine Readable Cataloging standard provides a combination of syntax

and semantics for a range of bibliographic applications. (Semantics are more properly described separately in cataloging rules such as the Anglo-American Cataloging Rules.) GILS adopts MARC semantics for the elements used in locator records and a one-to-one correspondence of GILS elements to MARC tagged elements is maintained in the GILS Profile. (see http://www.gils.net/prof_v2.html#annex_b)

How does GILS relate to the Dublin Core?
Dublin Core is a set of definitions (semantics) for some common metadata elements. The fifteen unqualified Dublin Core elements are mapped to GILS by the Library of Congress (see http://www.loc.gov/marc/dccross.html). Dublin Core does not specify syntax, although many implementors used a W3C proposed convention for HTML and some are now moving toward another new W3C proposal called Resource Description Framework. Unlike GILS, Dublin Core does not specify a search service. GILS-compliant search is commonly used in combination with Dublin Core in operational implementations.

How does GILS relate to Electronic Document Management Systems?
One of the primary functions of Electronic Document Management Systems is to provide access to documents by certain characteristics. GILS also provides search access by characteristics, and it is straightforward to use a product such as PC DOCS to map document management characteristics onto a GILS-compliant search interface.

How does GILS relate to SQL databases?
SQL (Structured Query Language) operates on relational databases. A relational database is one of the mechanisms that can be used to store locator records behind a GILS-compliant server and this approach is often used in GILS implementations.

How come GILS is sometimes called "Global Information Locator Service" and sometimes "Government Information Locator Service"?
One of the roots of GILS is in the Global Change Research Program, where the focus is on the global information infrastructure needed for long term access to environmental data and information. This work provided a base for a Government Information Locator Service initiative in the United States. As this was developing, a Global Information Society initiative began and included a project with the goal of gaining consensus on a Global Information Locator Service. The project reached consensus to employ the GILS Profile (see http://www.g7.fed.us/enrm/press.txt). From the perspectives of standards and technology, the Global Information Locator Service is no different than the Government Information Locator Service.

Further information pertaining to Frequently Asked Questions about GILS is available at http://www.gils.net/faq.html.