

Draft Functional Requirements
for
The Resource Discovery Service
of
The Library of Texas
June 12, 2002

Contents

Introduction	1
Functional Requirements for the Resource Discovery Service	3
A. Functional Requirements for Texas Libraries to be Represented in the Virtual Catalog	3
B. Functional Requirements for the LOT Search and Retrieval Interface	4
B.1. Search and Retrieval Interface (SRI).....	5
B.2 Search interface (SI).....	8
B.3 Retrieval Interface (RI)	11

Introduction

The Library of Texas (LOT) is a program of the Texas State Library and Archives Commission (TSLAC) and the Texas Telecommunications Infrastructure Fund Board (TIF). The LOT is an emerging, services-based virtual library that hopes to bring the resources of Texas libraries to all Texans. The ZLOT project is charged with identifying (a) a standards-based implementation for the virtual catalog and (b) a common search and retrieval interface for the resource discovery service for the Library of Texas.

Virtual catalog

Connotes the capability to search multiple library catalogs from a single interface without regard to the geographic location of either the searcher or the catalogs.

Integrating search and retrieval interface

Connotes the capability to integrate the discovery of resources in library catalogs, TexShare databases, and other resources from a single interface.

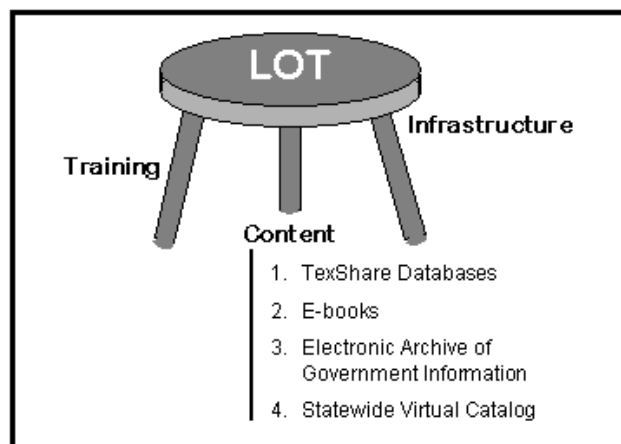


Figure 1. Structural Components of the Library of Texas (LOT)

Figure 1 depicts the three major structural components of the Library of Texas. The LOT infrastructure encompasses the hardware, software, and networks that support access to the LOT. Initial content of the LOT includes: (1) the 60 TexShare databases, (2) electronic books, (3) the electronic archive of government information that includes the Texas Records and Information Locator (TRAIL) system and the emerging electronic depository for Texas state publications, and (4) the emerging statewide virtual catalog. More content resources and collections may

be incorporated in the future. It is assumed that these resources will be distributed rather than centralized. The training component includes instructor-led training, train-the-trainer sessions, interactive video conferencing, and web-based training.

Figure 2 depicts a high-level functional architecture for the LOT resource discovery service. The four LOT content areas listed on the top left side of the figure contain discoverable resources. Information retrieval systems, which include library automation systems as well as vendor proprietary and standards-based systems, incorporate the necessary application software to define, search, retrieve, and manage the databases and the resources. When two or more online catalogs of bibliographic records representing the collections of two or more libraries are searched concurrently, these catalogs are considered a single "virtual catalog" for the duration of a user's search and retrieval session.

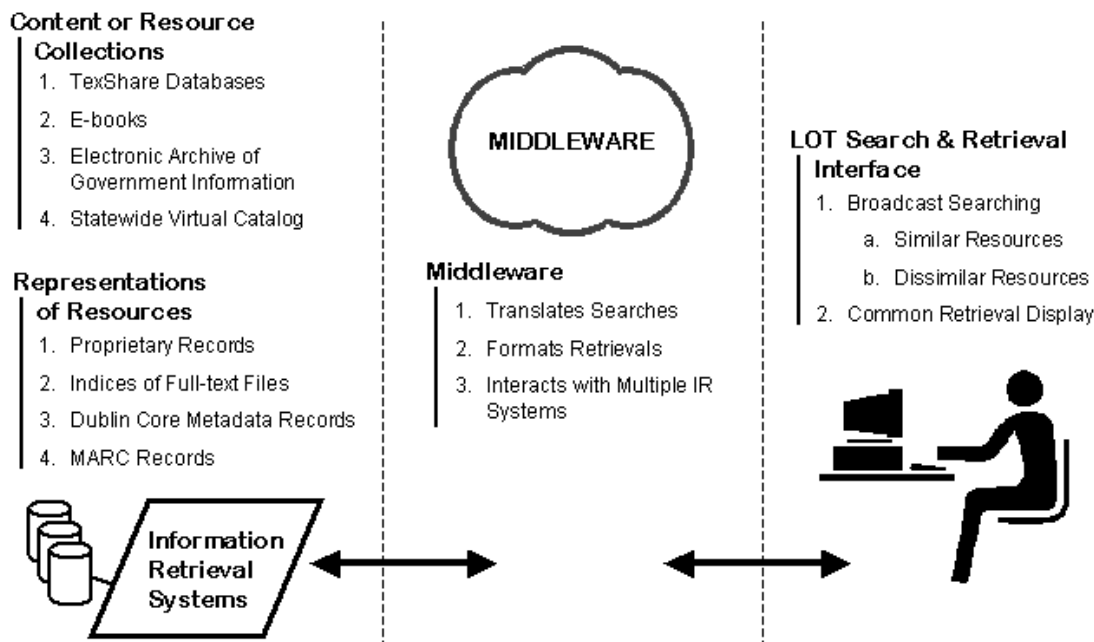


Figure 2. Functional Architecture for the Resource Discovery Service of the Library of Texas

On the right side of Figure 2 a user is shown interacting with the LOT search and retrieval interface. The term broadcast search refers to a search of more than one resource. Broadcast searches can be executed against similar or homogenous resources, such as Online Public Access Catalogs (OPACs), or they can be executed against dissimilar or heterogeneous resources, such as a TexShare database and an OPAC. In either case the search and retrieval interface application presents a common interface for expressing searches and presents retrieved results in a common format for display to the user.

The third functional component of the LOT resource discovery service is the middleware application(s). Middleware interconnects the search and retrieval interface application with the database search and retrieval software resident on one or more distributed information retrieval systems.

This paper specifies the draft functional requirements for the virtual catalog and for the overall LOT search and retrieval interface. It is expected that vendors will offer either stand-alone products or add-on products to existing library systems in order to satisfy these functional requirements. The ZLOT project will demonstrate vendor proof-of-concept implementations during the summer and fall of 2002. An expanded version of this document will be delivered to the Texas State Library and Archives Commission in June 2002. The expanded version will contain the same functional requirements and will also describe the processes involved in developing these requirements.



Functional Requirements for the Resource Discovery Service

A. Functional Requirements for Texas Libraries to be Represented in the Virtual Catalog

The section includes the functional requirements for information retrieval systems that manage online catalogs. The collection of these online catalogs will be the foundation of the virtual catalog. Since the Library of Texas will use standards as a basis for interoperability among systems, use of specific standards is implied by a number of the functional requirements and/or identified in the descriptions.

VC	Functional Requirements	Descriptions
1.	Recognize and respond to <u>basic</u> keyword search criteria with accurate results	<p>All online catalogs in the LOT must support the following search keyword queries:</p> <ul style="list-style-type: none"> • Author • Subject • Title • General Keyword <p>The goal is that the same query to several online catalogs yields accurate results. For example, a query of the title “merlin” would only return results in which the resource titles included the word “merlin” and conversely would not exclude any resources whose titles included the word “merlin”.</p> <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of search interoperability.</p>
2.	Recognize and respond to <u>enhanced</u> search criteria with accurate results	<p>All online catalogs in the LOT must support the following qualifying search criteria:</p> <ul style="list-style-type: none"> • Format (e.g., book, video, CD, etc.) • Language • Geographic location of owner • Date of publication • Type of material (i.e. digital or analog) • Cost (i.e. free or fee) • Owner • Availability <p>Support of Z39.50 and relevant Z39.50 profiles can address this level of search interoperability.</p>



VC	Functional Requirements	Descriptions
3.	Recognize and respond to <u>advanced</u> search criteria with accurate results	<p>All online catalogs in the LOT must support the following search queries:</p> <ul style="list-style-type: none"> • Author, subject, title, & keyword search with right truncation • Author, subject, & title search with exact match • Title & subject first word search • Title & subject first character search • Standard identifier search <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of search interoperability.</p>
4.	Recognize and respond to availability criteria in search queries	<p>All online catalogs in the LOT must provide the following availability information in response to user requests:</p> <ul style="list-style-type: none"> • Physical location • Copyright information • Circulation status • Circulation policy • Reservation • Delivery options • Time interval for delivery
5.	Provide bibliographic records in standard format for retrieval	<p>All online catalogs in the LOT must be able to return bibliographic records in MARC 21 format.</p> <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of retrieval interoperability.</p>
6.	Provide access to indexes for browsing	<p>All online catalogs in the LOT must provide the following indexes for browsing:</p> <ul style="list-style-type: none"> • Author indexes • Title indexes • Subject indexes <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of retrieval interoperability.</p>

B. Functional Requirements for the LOT Search and Retrieval Interface

The search and retrieval interface of the Library of Texas should present a common look and feel to its users thereby creating a self-contained virtual library experience. An intuitive, web-based, simple-to-use interface is imperative for the success of the LOT. Overall, it should be straightforward and non-cluttered in style, employing simple button functionality wherever possible. It must be easy to learn and require minimal computer and information literacy skills. Finally, it must be technically reliable with a proven bug-free history. This section includes functional requirements common to both the search and the retrieval interface and requirements specific to either the search or the retrieval interface.



B.1. Search and Retrieval Interface (SRI)

SRI	Functional Requirement	Description
1.	Present a consistent user experience	All screen displays and user interactions should have a common and consistent "look and feel" as well as common and consistent operational qualities regardless of the resource collection, library automation system, or other information retrieval system involved in the search and retrieval operations. The intent is to provide LOT users with an identical experience regardless of their access venue (i.e., library, home, or office).
2.	Enable independence of the interface from resources and changes in resources	The interface should be designed in such a way that it can remain stable in both its "look and feel" and in its operational qualities regardless of changes to the accessible resource collections and their associated lists and databases. The intent is to minimize changes to the interface caused by fluctuations in the LOT's resource collections and their individual resources. This is important to promote users' fluency with the LOT interface and its operations.
3.	Allow libraries to offer patrons access to a statewide common LOT interface and/or a locally customized version of the common LOT interface	The application software driving the interface should be provided in two fashions: (a) a shared LOT interface, centrally hosted, designed for remote access by patrons of multiple libraries, and (b) a library-specific interface designed for installation within a particular library for its patrons. Both instances should provide essentially the same interface, preserving the common "look and feel" and the consistency of operational qualities.
4.	Link to local library web sites	For libraries that elect to interact with the LOT via a shared LOT interface (SRI 3), the interface should consistently insert a local library presence driven from a database that would include, for example, a local library name and a hyperlink to the library's web site if one is available.
5.	Support local customization	For libraries that elect to install the interface software in their own libraries, the interface should allow for local customization in a consistent manner. This customization might include the library's name, address, hours, contact information, access to the online catalog, access to online special collections, or other requirements to be determined later.



SRI	Functional Requirement	Description
6.	Interact with profiles of participating libraries	Consistent profiles containing information about the libraries participating in the LOT are needed. Data in these profiles could be used (a) to customize the interface for local libraries and (b) to provide information to users interested in the owner of resources they discover. The profiles might include the library's name, address, hours, contact information, or other requirements to be determined later.
7.	Describe the available resource collections	Include easy access (e.g., a button) to a list of the contents of all resource collections available for resource discovery and a high-level description of the contents of each collection. For example, the list might identify the aggregated TexShare databases and the library catalogs included in the LOT. This information could be recorded in collection description records.
8.	Describe the journals in the TexShare databases	Include easy access (e.g., a button) to the descriptions of each journal, serial, or newspaper included in each of the TexShare databases. This is a more granular description than describing the TexShare databases in their aggregate.
9.	Support user-selectable language interfaces	Allows users to easily select the language for their interface. The available languages should be representative of significant Texas populations as reflected in demographic information. This would include Spanish, Korean, Hindi, Vietnamese, and German.
10.	Allow users to create default user profiles	Allow users to easily create profiles that identify search and retrieval criteria of consistent importance to them. This "default" user-specific profile would define preferences such as language, format, cost, and availability. (These four criteria are expected to be of major importance to most LOT users.) The interface would pre-select users' preferences at login.
11.	Allow users to select a system's native interface	Users should be able to move out of the common LOT interface to search known resources of interest to them through a particular resource's native interface. For example, this might involve a user moving from the common LOT interface to search a particular TexShare database through that database's native interface.



SRI	Functional Requirement	Description
12.	Authenticate users	Employ a mechanism to authenticate users for resources where access control is necessary (e.g., licensed databases). The mechanism might include: IP recognition or entry of patron-specific or library-specific usernames and passwords. The current TexShare authentication procedures could serve as a model.
13.	Allow users to search only those resource collections from which they have the right to obtain the resources	For resource collections or specific resources that have access and/or distribution restrictions based on user affiliation, the interface should only present users with those collections or resources for which they have the right to search and retrieve. This would allow a local library to offer access to local resources to local library users through the LOT interface. This provides another level of integration of resources for the user, enabling access to LOT and local library resources.
14.	Keep user logins to a minimum	Provide a mechanism that authenticates users as few times as necessary.
15.	Collect usage statistics	<p>Individual libraries are interested in the frequencies with which their resources are used, therefore statistics relative to the number of times a library's catalog was included in a search, the number of requests received for ILL resultant from a LOT search, and the number of times their web site was accessed via a LOT link will be important. Libraries will also need statistics on the use by their users of non-local resources (e.g., TexShare databases).</p> <p>Likewise overall usage of the LOT as reflected in the usage statistics of patrons of individual libraries will be important for evaluation of the LOT at the state level.</p> <p>Specific types of statistics or other requirements will be determined in the future.</p>
16.	Provide technical and operational support	Installation, reference, and general help manuals should be provided for all components of the LOT search and retrieval interface.
17.	Meet accessibility standards	The interface should conform to web content accessibility guidelines. The goal is to enable LOT access for a wide range of persons, including persons with visual and auditory disabilities.



B.2 Search interface (SI)

SI	Functional Requirement	Description
1.	Provide <u>simple</u> keyword search functionality	<p>The basic interface should allow an undifferentiated keyword search. This could be any word, for example a topic, title, name, date, etc.</p> <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of search interoperability.</p>
2.	Provide <u>basic</u> search functionality that includes the following search criteria: <ul style="list-style-type: none"> • Author Keyword • Title Keyword • Subject Keyword • General Keyword 	<p>The basic interface should provide four basic keyword search types: author, title, subject, and general keyword.</p> <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of search interoperability.</p>
3.	Provide <u>advanced</u> search functionality that includes: <ul style="list-style-type: none"> • Boolean logic • Truncation • Exact match • First word search • First character search • Limiting results to full-text • Search history • Combined searches • ISBN • OCLC number 	<p>The advanced search interface should provide advanced searching options comparable to those available on library automation systems and proprietary databases. These include: Boolean operators, author, subject, title, & keyword search with right truncation, author, subject, & title search with exact match, title & subject first word search, title & subject first character search, limiting to full-text resources only, access and use of search histories, combining searches, and the use of unique identifiers such as ISBN or OCLC number.</p> <p>(Note: It is understood that the interface can only present functionality consistent with what is available in the resource collection selected by the user.)</p> <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of search interoperability.</p>
4.	Allow refinement of searches with qualifiers <ul style="list-style-type: none"> • Format (e.g., book or video) • Language • Geographic proximity • Date of publication • Date ranges • Type of material (e.g., digital or analog) • Cost (e.g., free or fee) • Owner • Availability 	<p>Users should be allowed to limit their searches based on the following qualifiers: format, language, geographic proximity of the resource owner to the user's local library, date of publication, date ranges, type of material, cost, owner, and availability.</p> <p>Support of Z39.50 and relevant Z39.50 profiles will provide this level of search interoperability.</p>
5.	Allow concurrent searching of multiple online catalogs	Concurrent searching of multiple online catalogs with the same query should be supported.



SI	Functional Requirement	Description
6.	Allow concurrent searching of multiple TexShare databases	Concurrent searching of multiple databases with the same query should be supported.
7.	Allow concurrent searching of multiple LOT resource collection types	Concurrent searching of multiple online catalogs, databases, and other LOT resources with the same query should be supported.
8.	Allow concurrent searching of multiple LOT resource collection types as well as the web	Concurrent searching of all LOT resources as well as web-based resources with the same query should be supported.
9.	Group resource collections by subject	<p>The search interface should allow users to easily select one or more categories for their search. Categories should be based on disciplines or subjects and should be persistent over time.</p> <p>The interface application should allow resource collections and sub-collections, such as specific journals or databases, to be associated with the categories. Easily accessible descriptions of the resource collections should be available to assist the user in selecting appropriate collections to search.</p> <p>The goal is to keep the interface categories constant while allowing for changes in the resource collections and sub-collections associated with the categories.</p>
10.	Group online catalogs by geographic proximity	<p>The interface should group online catalogs available for searching by the owner's geographic proximity to the user's local library. Users should be able to search based on one or more proximity categories.</p> <p>For example, the proximity of owners could be classified by intervals of miles from the user's local library, such as "less than 10 miles", "within 25 miles", etc.</p>
11.	Group online catalogs by type of library	<p>The interface should group online catalogs available for searching by type of library. For example, library type groups would include public and academic libraries.</p> <p>Both static and dynamic groupings should be functionally possible. For example, preset groups of libraries and user-selected groups of libraries should be possible.</p>
12.	Limit searches to local resources	An easily selectable (e.g., a button) option to search only resources in the patron's local library should be provided.



SI	Functional Requirement	Description
13.	Allow customized presentation of resource collections or resources at the local library level based on user groups and other criteria	The interface should provide a simple mechanism for local libraries to customize searches for local needs. For example, a public library might provide ready access to a collection of resources required for students by the local school district or a college library might provide access to their own proprietary databases.
14.	Allow local libraries to select a group of catalogs for searches that will be the default set for searching	The local library should be able to pre-select default library catalogs for searching but the default should be easily overridden by the user.
15.	Allow the resource collections of non-Texas libraries to be included	The interface should be easily configurable to include catalogs from non-Texas libraries. This is important for many libraries, in particular for libraries bordering other states and for libraries that want to present national libraries for searching by users.
16.	Allow users to specify a critical time sensitivity for their information need	<p>Allow users to easily indicate (e.g., via a button) the time sensitivity of their information need such that only resources that meet this requirement are retrieved. This would enable the system to filter out materials based on their availability.</p> <p>For example, selecting a "NEED IT NOW" button would return only online resources to which the user had retrieval rights and would not return lists of books at other libraries that would need to be borrowed.</p>
17.	Support queries in Spanish	Whether records representing resources or the resources themselves are in Spanish or not, users should be able to enter search terms in Spanish. A translation functionality to enable execution of the search query on all information retrieval systems in the LOT should be provided.



SI	Functional Requirement	Description
18.	Support searches of special collections	<p>The interface should include the ability to search the online records for special collections in Texas libraries. No collections have been identified as yet for the LOT and a standard for representation has not been defined. There is an understanding that just because collection is searchable does not mean that items in the collection are available for resource sharing.</p> <p>Examples of special collections that could be considered are those collections included in the Texas Archival Resources Online (TARO) project. This project is creating machine-readable collection descriptions or "finding aids" for archival, manuscript, and museum collections at five universities and the Texas State Library and Archives. The standard for these finding aids is the Encoded Archival Description (EAD) Document Type Definition (DTD).</p>
19.	Allow users to browse catalogs	<p>The search interface should allow users to select a catalog browse feature (e.g., via a button). This "search by browsing" function would allow users to browse through alphabetical lists (e.g. author indexes, title indexes, or subject indexes) on a catalog-by-catalog basis.</p> <p>For example, if a user knows the title of a book and selects the "Browse" button, they could select a catalog to browse and enter the first few words of the title. The result of this function would be to display the ordered title index entries before and after the browse terms entered by the user.</p>

B.3 Retrieval Interface (RI)

RI	Functional Requirement	Description
1.	Group results in tiers organized by subject categories	Organize search results hierarchically by categories. This could possibly be done using subject categories or metadata associated with resources.
2.	Group results according to type and format of resource	Organize search results for easy access according to the type and format of the resource. For example, all digital images might be grouped together and further organized by image type (e.g., png or gif).



RI	Functional Requirement	Description
3.	Group results according to user selectable criteria	<p>Allow users to specify the manner in which the results of their searches will be grouped. Groupings that are expected to be of importance to most LOT users include:</p> <ul style="list-style-type: none"> • Format (e.g., book or video) • Language • Geographic proximity • Date of publication • Type of material (e.g., digital or analog) • Cost (i.e., free or fee) • Availability
4.	<p>Include the following data elements in retrieved results:</p> <ul style="list-style-type: none"> • Author • Subject • Title • Keywords • Format (e.g., book or video) • Language • Geographic proximity • Date of publication • Type of material (e.g., digital or analog) • Cost (e.g., free or fee) • Owner • Standard identifier • Availability 	<p>For each resource in search results, the interface should provide this basic information.</p> <ul style="list-style-type: none"> • Author • Subject • Title • Keywords • Format (e.g., book or video) • Language • Geographic proximity • Date of publication • Type of material (e.g., digital or analog) • Cost (e.g., free or fee) • Owner • Standard identifier • Availability
5.	<p>Indicate resource availability in terms of:</p> <ul style="list-style-type: none"> • Physical location • Copyright information • Circulation status • Circulation policy • Reservation • Delivery options • Time interval for delivery 	<p>Retrieval results should include information about resource availability. This information should specify each resource's physical location, copyright information, circulation status, the applicable circulation policy, ability to be reserved online, delivery options, and estimated delivery timeframe.</p> <p>A set of icons could be developed to reflect the lending policies associated with each resource. These would be designed for easy recognition in the search results.</p>
6.	Link to resources directly from search results	For electronic resources, a link should be provided directly from each retrieved record to the resource.
7.	Initiate a search of online catalogs for journal titles selected by users from search results	Provide a mechanism for users to identify the owners of journals from records in search results. This might be a button that, when selected, initiates a search of pre-selected online catalogs and returns a list of libraries grouped by geographic proximity to the user's local library or some other grouping criteria.



RI	Functional Requirement	Description
8.	Initiate a borrowing request directly from the search results	Provide a mechanism for users to initiate a borrowing request directly from each retrieved record. (Note: User-initiated borrowing does not imply a non-mediated borrowing process.)
9.	Alert users of the local availability of resources	Indicate, perhaps via an icon, the resources held in the user's local library.
10.	Allow users to document search results	The interface should include easy-to-use mechanisms that allow users to save, email, and print search results.
11.	Provide a follow-on search to discover resources similar to one identified by the user	<p>The interface should provide a means for conducting a follow-on search. From the user's perspective this search would be executed transparently. This could be done via a button associated with a single record that allows the user to click to "find more like this one."</p> <p>This would enable a user to begin with a general search, such as is commonly done with a keyword, and then refine the search in accord with retrieved results.</p>

DRAFT