Functional Requirements
NSDL Metasearch Instance

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**Disclaimer**  
This is a living document. It will be updated as needed, and changes will be noted.

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OVERVIEW

Definitions

**Metasearch Infrastructure Project:** CDL’s project to build tools which enable campuses to build localized search services which provide access to multiple resources (e.g. licensed databases).

**Metasearch instance:** One such service built with the tools.

**NSDL:** The National Science Digital Library, a division of the National Science Foundation. CDL received a grant from NSDL.

**NSDL OAI metadata:** This metadata originates from the many grant-funded projects under the auspices of NSDL. NSDL is an aggregator of the metadata, and CDL has already harvested selected metadata from NSDL.

Background

The NSDL metasearch instance will be built to satisfy the requirements of CDL’s grant from the National Science Digital Library. The NSDL metasearch provides an end-user with one location to launch a search across two types of content – licensed databases, and digital resources accessible via the NSDL OAI metadata. The grant requires that the NSDL OAI metadata repository resources be incorporated.

Purpose

The NSDL metasearch instance will be built primarily as a demonstration to satisfy CDL’s NSDL grant. Librarians on the UC campuses will be evaluating it as the infrastructure for future portals that the Metasearch Infrastructure Project will enable them to specify. (Exactly what level of technical engagement campuses will need to have in the future is to be determined). NSDL will also be evaluating it. The primary audience is faculty, graduate students, and upper-level undergraduate students, who will ultimately be the end users.

Use Cases

The subject focus of this demonstration portal is earth sciences.

- A faculty member knows that the paper he wants is cited in a licensed database, so he wants to find that paper, but also others which will give context
- A grad student is looking for data and studies surrounding earthquakes in Pakistan.
- An undergraduate student needs an overview of tsunamis.

Users

**Administrators**
• Librarians on UC campuses. For this prototype, CDL is standing in for the campus users.

**End Users**
• Faculty
• Graduate students
• Undergraduate students

**Expectations for the Development Process**
Although the NSDL metasearch instance is meant to be a prototype, the Metasearch Infrastructure Project is meant to provide infrastructure for services that will be supported by CDL. This transition from prototype(s) to production service will be accomplished via a phased approach. The NSDL instance will be the first phase. Thus, these functional requirements should be considered as a minimum set. The Metasearch Infrastructure Project will have further feature requirements, which will be specified for future phases.

**What We’re Not Trying to Accomplish**
Searching of crawled web content will be a future requirement within the Metasearch Infrastructure Project, but unfortunately must be out of the scope of this prototype. The NSDL portal will not have browse functionality for the end user, though we plan to use CDL’s CUI faceted browse for OAI metadata analysis.

**FUNCTIONAL REQUIREMENTS**

**Function descriptions**

**Database chooser:** End user is presented with a list of databases that can be included in a search. Some of the databases are already pre-selected for inclusion, via checkboxes. The user can then select or de-select databases to be included in a search, via checkboxes.

**Search:** Query launched across both MetaLib databases and OAI metadata.

**Query status monitor:** After he/she launches a search, the end user is presented with a list of the MetaLib databases being searched, along with the number of results already available, and the total number of results.

**Results display:** Presentation of the results of a given query. The Metasearch Infrastructure Project team proposes two different prototypes: (1) A display which keeps the MetaLib results and OAI metadata results separate. (2) A display which integrates the results.

**Feed aggregator:** Consume, aggregate, and display remote RSS feeds.

**Journal A-Z browse:** Allows browse through a topical subset of SFX data.

**UC-eLinks:** UC-eLinks will appear along with citations, as they do in licensed databases. If full text is available, that will be indicated. (via pre-lookup)
**Error Handling**: Display of system errors.

**Authentication/Authorization**: User is allowed in, and sees only the resources that are available to his/her campus.

**Help**: Help page

**Header and footer**: For this prototype, display a campus “look and feel” as an example.

**Function details**

1. **Database chooser**
   1.1. Display list of databases from MetaLib CKB on the page
   1.2. List is divided into two tiers: Most Important, Also Useful
   1.3. Pre-set databases on the list as selected or deselected for search, in any combination. (This is envisioned as checkboxes, filled in or not)
   1.4. End-user can select or de-select each database for search via checkboxes. End user must be able to select or unselect in any combination
   1.5. Associate description (# characters tbd) with each database name, and display (# characters tbd)

2. **Search**
   2.1. Query against specified set of MetaLib databases/targets
   2.2. Query against OAI metadata
   2.3. Allows keyword, across all fields
   2.4. Allows phrase search
   2.5. Allows boolean operators: AND, OR, NOT
   2.6. Input box must be persistent across all pages
   2.7. Last search must be displayed in input box

3. **Query status monitor**
   3.1. For each MetaLib source included in the search, display number of results currently returned and total number of results.
   3.2. For each MetaLib source included in the search, if there is no data for results, display “searching…”

4. **Results Display: Case (1): Separate MetaLib and OAI metadata results displays:**
   4.1. MetaLib results
      4.1.1. Return ranked by MetaLib determined relevance
      4.1.2. Ability to specify maximum number of results to be returned
      4.1.3. Ability to specify number of results to be displayed per page view
      4.1.4. Ability to configure display, in any order, any of the following elements:
4.1.4.1. Title
4.1.4.2. Author
4.1.4.3. Format
4.1.4.4. Journal Title
4.1.4.5. Citation Details
4.1.4.6. Volume
4.1.4.7. Issue
4.1.4.8. Page Numbers
4.1.4.9. Date
4.1.4.10. Truncated description or abstract <character limit tbd>
4.1.4.11. Full description or abstract
4.1.4.12. UC-eLinks, and icon for full text, if full text is available
4.1.5. If any element is not available in a particular citation or target database
   4.1.5.1.1. If element is displayed on single line in display, delete line
   4.1.5.1.2. If element is grouped with others on a line, continue display with
               next available element on that line
   4.1.5.1.3. If results=0, display text
4.2. OAI metadata results
   4.2.1. Return ranked by relevance (default)
   4.2.2. Ability to specify maximum number of results to be returned
   4.2.3. Ability to specify number of results to be displayed per view <number to be
           determined>
   4.2.4. Ability to configure display, in any order, any of the following:
       4.2.4.1. Title
       4.2.4.2. Author (or organization/creator/website --- check fields!)
       4.2.4.3. Truncated description or abstract (character limit to be determined)
       4.2.4.4. Full description
   4.2.5. If results=0, display text (text to be determined)
5. Results Display: Case (2) MetaLib and OAI metadata results presented together
   (Requirements in addition to Case (1))
   5.1. SRU/W configuration, that sets up OAI metadata as target
   5.2. Merge/de-dupe/rank using MetaLib alone and present records interleaved and
        undifferentiated
6. Feed aggregator
   6.1. Ability to consume all the major syndication formats (RSS 0.9.x, RSS 1.0, RSS 2.0,
        Atom 1.0)
   6.2. Ability to configure which remote feeds to consume and the periodicity for polling
        each remote feed
   6.3. Ability for a single web page to display any arbitrary number of feeds.
   6.4. Ability to display any arbitrary element of a remote feed, either grouped by feed or
        interleaved, sorted chronologically or reverse chronologically
   6.5. Ability to customize the look and feel of the displayed feed elements
7. **Journal A-Z browse**

8. **UC-eLinks**
   8.1. Ability to display OpenURLs
   8.2. Ability to generate a "Full-Text" link--for each item on a search results page, and on the details page.

9. **Error Handling**
   9.1. Ability to display system errors from any backend system (MAX, MetaLib Server, Search Service, etc.)
   9.2. Ability to customize user errors (e.g., "zero results pages") and validate forms to prevent errors in the first place.

10. **Authentication/Authorization**
   10.1. Ability to allow/deny sets of UC campus users (UCD vs. UCLA, no need to distinguish joe@ucla vs. sue@ucd) to licensed content based on the UC campus affiliation.

11. **Configurable header and footer**
   11.1. Ability to customize the header, footer, and link to CSS file

12. **Help**
   12.1. There will be a single help page with anchors.
Appendix 1: Screen by Screen Illustration

The graphics and layout of the screens are shown here merely to illustrate the underlying functionality. The actual look and feel will be refined with the input of the User Experience team and/or graphics designers, as well as iterative user feedback gathered by the Assessment team.
Entry page

Entry page does this:
- Allows user to learn what resources are available to be searched, and gives a brief description of the resources
- Allows user to select and deselect MetaLib databases to be included in the search
- Allows user to enter a search across both MetaLib databases and OAI metadata
- Shows the user one or more RSS feeds in real time
- Allows the user to browse an A-Z list of electronic journals
- Allows user to navigate to help page

Entry page has the following components
- Configurable header and footer
- Persistent search box
- Database Chooser
- Feed aggregator
- Journal A-Z Browse
- Link to help

Entry page looks like this:
Case (1): Results page – while processing (primarily while MetaLib results are processing)

Results page does this while processing
- Lists databases being searched
- Allows user to navigate to help page
- Displays OAI metadata results

Results page has the following components while processing
- Configurable header and footer
- Persistent search box with last search filled in
- Query status monitor
Case (1): Results page – with filled in results

Results page does this:

- Displays initial search results from both MetaLib and OAI metadata
- Allows user to navigate to Metalib detailed result pages
- Allows user to navigate to full text, if available
- Allows user to navigate to help page

Results page has the following components:

- Configurable header and footer
- Persistent search box with last search filled in
- Query status monitor
- Search results from MetaLib
- Search results from OAI metadata

Results page looks like this:
Detailed MetaLib result page

Detailed MetaLib result page does this:
- Presents one result in detail
- Allows user to navigate to full text, if available
- Allows user to navigate to help page
- Allows user to return to results page
- Allows user to navigate to detailed view of previous or next result

Detailed MetaLib results page components:
- Configurable header and footer
- Persistent search box
- Detailed results display
- Title
- Journal title
- Citation details (volume, issue, page numbers, date)
- Author
- Full description or abstract
- Citation formatter
- UC-eLinks

Detailed MetaLib result page looks like this:


Author: Mani Retifi

Abstract: Retifi aims to encourage the reader to try paper prototyping during the formative evaluation of user interfaces. Such "do-it-yourself" prototyping can be done with simple artist's supplies and, the author argues, allows both designer and user to concentrate on deeper design issues than just what colors or fonts, such as the conceptual metaphor of the overall design. Even computer-supported prototyping tools, he further argues, tend not to work well for generating design ideas because they tend to create design metaphors in developers. Retifi argues, finally, that until you try this method, you will not be convinced of its real value. I would argue that such tools are both good and bad for design brainstorming, because they take time for someone to "play computer" in response to a user's intended action. The reason that they are good is that, while the state of the paper prototype is being changed, the user and the designer can reflect on other possibilities, and such reflection is standard practice in design studios. On the other hand, not all interfaces are equally suitable to such an approach, and the author fails to point this out.
Appendix 2: Functionality to be developed in future phases of the Metasearch Infrastructure Project

To be prioritized.

If developed, these functions may be added to the NSDL instance.

- Branding service which enables non-programmers to customize header/footer/link to CSS, choose target databases, do initial ping, etc
- Citation formatter: Allows user to process selected citation into a number of standard formats
- Contextual help provided via additional mechanisms
- Crawled/indexed web results
- Database adviser functionality
- Download citations
- Further “basket” functionality (save, download, print, etc)
- Index & query of RSS feeds
- Institutional account service
- Metasearch of ejournals
- Personal account services
- Personalized RSS
- Reports (timeouts, broken links, exceptions, usage stats, failures, etc)
- Results limit
- Results sort
- Save citations to permanent workspace
- Save queries to permanent workspace
- Search by Title, Author, Subject, Year
- Search history
- Thumbnail generator