

The Charleston Advisor

The Open Archive for Library and Information Science

<http://eprints.rclis.org/>

By:

Heather Morrison

E-LIS

heatherm@eln.bc.ca

Imma Subirats Coll

E-LIS Director

imma.subirats@gmail.com

Norm Medeiros

E-LIS Editor, U.S.

nmedeiro@haverford.edu

Antonella De Robbio

E-LIS Founder

antonella.derobbio@unipd.it

Score: n/a.

Pricing: open access: free for searchers & contributing authors

Critical Evaluation: E-LIS is an open access archive for library and information science. With over 5,800 documents as of June 2007 (over 5,000 in February 2007 when the archive was investigated in-depth), E-LIS is the world's largest archive for LIS. Over half the documents in E-LIS are peer-reviewed. E-LIS is particularly strong in English and Spanish language documents, but supports over 22 languages. With this multilingual support and a global team of volunteer editors, E-LIS has significant diversity in content, an advantage over traditional, english-based LIS resources. Not surprising, this tool designed by and for librarians features robust and user-friendly search options. Lack of phrase searching, and pointing to a cross-archiving searching tool no longer supported when much better options are available, are identified as areas for improvement.

Contract provisions: E-LIS is open access. No contract required! E-LIS does not ask depositing authors to transfer any copyright.

Authentication: n/a

References

Arencibia Jorge, Ricardo and Santillán Aldana, Julio and Subirats Coll, Imma (2005) Iniciativas de acceso abierto en Ciencias de la Información y Documentación : evolución y perspectivas de E-LIS. Revista Española de Documentación Científica 28(2):pp. 221-232.

<http://eprints.rclis.org/archive/00004475/>

Jasco, Péter. E-prints in Library and Information Science (e-lis). Péter's Digital Reference Shelf. May 2007. <http://www.galegroup.com/reference/peter/200705/e-lis.htm>

Subirats Coll, Imma and Barrueco Cruz, José Manuel (2004) Un archivo abierto en ciencias de la documentación e información. El Profesional de la Información 13(5):pp. 346-352.

<http://eprints.rclis.org/archive/00002472/>

This article is an evaluation of E-LIS, the Open Archive for Library and Information Studies. The authors are aiming for the objectivity one expects with a standard Charleston Advisor review, however the reader should note that the authors are E-LIS Editors.

With open access archives, there are two key facets of evaluation for librarians. One is the features of the archive for the author; this is particularly relevant for librarians with E-LIS, since E-LIS is designed for our own literature, and there are several options for archives in librarianship. Another facet of evaluation is from a searching perspective.

Content

E-LIS as a service for authors, journals, and conference organizers

All documents in E-LIS are fully open access, reflecting the purpose of the E-LIS archive, to advance the open access philosophy by making available papers in LIS and related fields. The submission policy of E-LIS (from the E-LIS web site) is:

E-LIS archive accepts any scientific or technical document, published or unpublished, in Librarianship, Information Science and Technology, and related application activities in any language. The criteria for acceptance are that the documents are relevant to research in LIS fields and that they have the form of a finished document that is ready to be entered into a process of communication.

Publications may include: preprints (pre-refereed journal paper), postprints (refereed journal paper), conference papers, conference posters, presentations, books, book chapters, technical reports/departmental working papers, theses, and newspaper and magazine articles. E-LIS is designed for text-based documents. For preservation purposes, PDF or html is recommended. Microsoft word, powerpoint, excel, and text are recognized, but not supported for preservation purposes. That is, E-LIS will host the documents, but future usability is considered uncertain. More detail about plans for preservation can be found in the Contract Options section below

For many authors, it may come as a surprise that formats such as powerpoint, word, and excel, are not recommended. For many of us, these formats are ubiquitous. However, this is a learning curve that is worth the time and effort, not only for future preservation, but also for most effective dissemination of our work, today. While the powerpoint, word, and excel formats are very common, they are proprietary, and documents in these formats are not available to those who do not have a license to use the software, which is far from free. With PDF, the Adobe Acrobat reader is free, so the document can be viewed by anyone with a computer and an internet connection.

For authors wishing to deposit works that are not text-based, other open access archives are available. For example, librarians in Western Canada are beginning to share tutorials through the COPPUL Animated Tutorials Sharing Project (ANTS)¹ and the British Columbia, ALPS Shareable Online Resources (in progress)². Open access archives are designed to be cross-searchable, so items deposited in different places for reasons of formatting can be brought together in search results using tools like OAlster.

Documents are accepted in any language, a unique feature of E-LIS. Currently, 22 languages are supported; if a document is deposited in a language not yet supported, E-LIS will investigate support for this language. English is the primary language of the archive. The search interface is in English, and each document not in English must be accompanied by an English abstract.

The registration process is simple, and only takes a few minutes. A first-time depositing author enters their e-mail address, and selects a username and password. The depositing author takes responsibility for ensuring that inclusion of the work in E-LIS is consistent with copyright. After an

item is deposited, it is verified by an editor, who will check the metadata before completing the deposit. Ensuring that metadata is correct helps to ensure that like documents are gathered correctly in searches, for example that conference proceedings are brought together under one URL for browsing and linking purposes.

Once the document is in the archive, the author will have a stable URL with which to refer anyone to that document. Download statistics are available, so that the author can see how many abstract and article views there have been, by time frame and/or by country. When an author has multiple works in the archive, there is a single stable URL to link to all of the author's works in E-LIS.

E-LIS works not only with individual authors, but also with publishers and with conference organizers, to coordinate deposit of entire journals and conference proceedings. Like individual authors, journals and conferences each receive a stable URL that links to all of their documents.

The size and widespread collaboration behind E-LIS provide advantages to the author in disseminating work. 69 editors from 41 countries are actively involved in promoting E-LIS, enhancing the probability that works of E-LIS authors will be found.

E-LIS for searching (content)

As of February 3, 2007, E-LIS included a total of 5,043 documents. The E-LIS Advanced Search allows for global searching on each field, which greatly facilitates an analysis of E-LIS contents.

2,842 of the documents in E-LIS, or 56%, are refereed. There are a total of 2,531 journal articles (online / unpaginated or print / paginated); of these, 1,940, or 76% are refereed. There are 1,178 conference related items (proceedings, papers, posters); of these, 549, or 46%, are refereed. There are a number of other types of documents in E-LIS, such as theses (133), book chapters (119), and more.

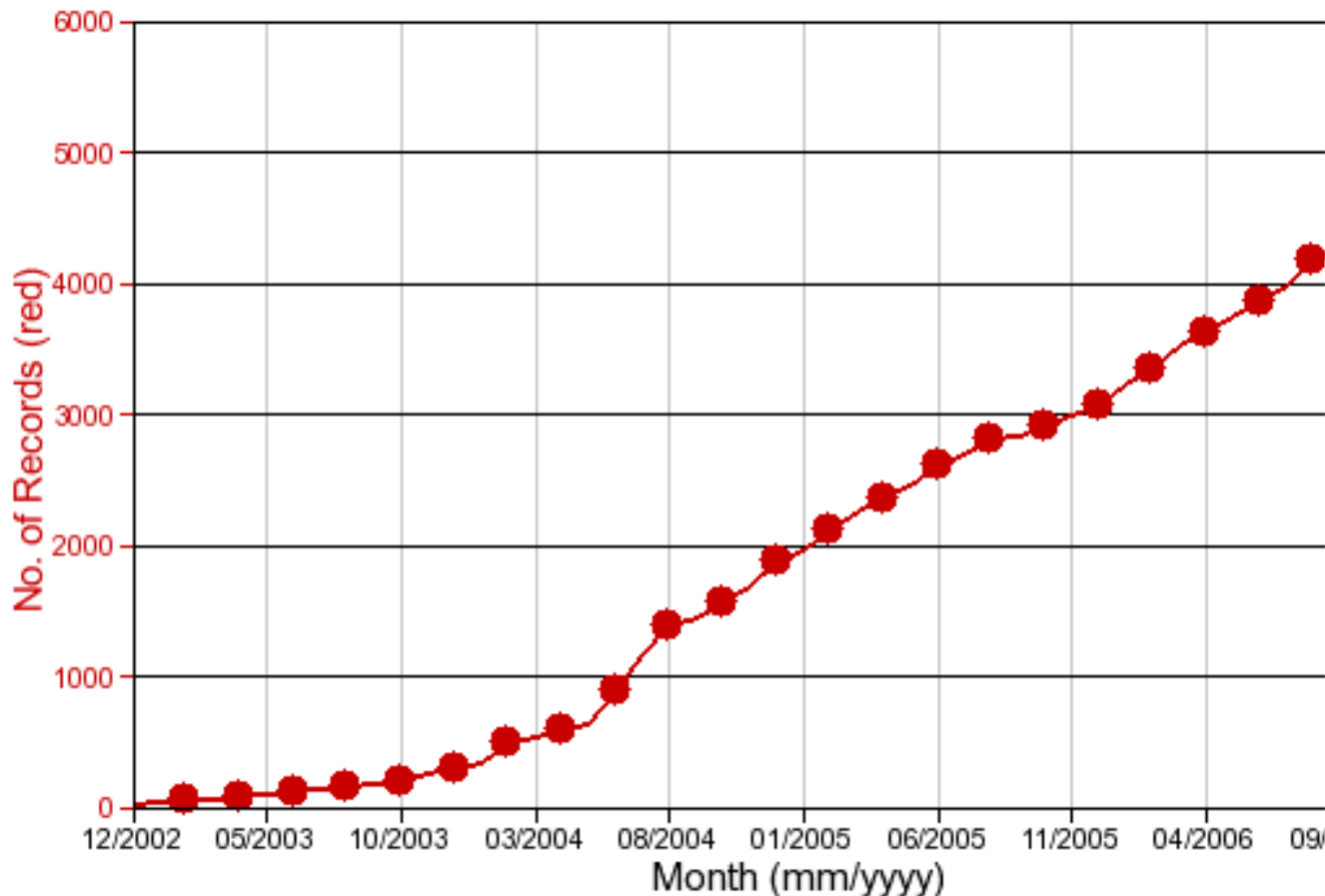
About two thirds of the documents are in Spanish (1,720 documents), or English (1,665), with the remaining documents scattered over a wide variety of languages, predominantly European languages, (e.g. Italian – 639, German – 113, Polish – 34, Chinese - 42).

There are several open access archives in Library and Information Studies. With over 5,000 documents, E-LIS is the largest by far, and is growing rapidly. E-LIS growth is highlighted as particularly noteworthy in E-LIS Editor Morrison's December 2006 update to *The Dramatic Growth of Open Access*¹, with a growth in the last quarter of 2006 equivalent to a 55% annual growth rate.

The growth rate of E-LIS is illustrated by Figure 1 below.

E-Lis: Research in Computing and Library and Information

Generated by <http://archives.eprints.org/>



Last Successful Harvest: 2007-02-10T16:56:12Z
Total Records 5147

Figure 1. E-LIS Records December 2002 to February 2007.

There are good reasons to expect the strong rate growth of E-LIS to continue. One of the roles of the E-LIS Editorial team, with close to 70 members in over 40 countries, is promotion of the archive. The size of this team makes it possible for E-LIS to work with a number of conference organizers, journal publishers, and editors simultaneously. For example, 2006 E-LIS additions included the *Proceedings of International Workshop on Webometrics, Informetrics and Scientometrics & Seventh COLLNET Meeting, Nancy (France)*, the *Proceedings of the 69th Annual Meeting of the American Society for Information Science and Technology (ASIST)*, Austin (US), and the proceedings of the *8th International Bielefeld Conference, Bielefeld (Germany)*, among others.

E-LIS continues to seek opportunities to work with organizers of significant conferences. For example, E-LIS U.S. Editor Norm Medeiros is currently working with organizers of the *XXVI Annual Charleston Conference: Issues in Book and Serials Acquisitions*, to deposit conference proceedings for all authors interested in participating. These initiatives not only make the work of these conferences openly available, they also raise awareness of E-LIS services among authors, increasing the probability of future submissions to E-LIS.

The second-largest archive for library and information science, including other related disciplines, is DLIST <http://dlist.sir.arizona.edu/>, with 859 documents as of Jan.24, 2007. DLIST is very english-language focused. However, E-LIS, has nearly twice as many English language documents as DLIST. Another open access archive for library and information science of significant size is the *Archive Ouverte en Sciences de l'Information et de la Communication* - <http://hal.ccsd.cnrs.fr/http://archivesic.ccsd.cnrs.fr/>, with 773 documents. The focus is on French language material, and the search interface is also in French. Contents include peer-reviewed articles, conference proceedings, and grey literature. E-LIS includes only 48 documents in French. Documents in library and information science will be found in other archives as well, including institutional repositories. There is some, but little, duplication of content in open access archives.

In summary, E-LIS is the largest of the open access archives for library and information science, and growing rapidly. All documents are open access, and more than half are peer reviewed. E-LIS is particularly strong in English and Spanish language content. E-LIS does not match the *Archive Ouverte en Sciences de l'Information et de la Communication* for French-language content. In addition to size, a key strength of E-LIS is its broad global base and multilingual support. The contents of E-LIS are unique in their diversity.

Searchability

It should not be surprising that an archive designed by and for librarians is very well designed for searching. There are Simple, Browse, and Advanced search options, all designed for the best balance between ease for the use and a high degree of specificity in searching. According to Jasco, E-LIS has an unusually rich variety of browse options. These browse options include conference, book or journal, author or editor, subject, country, and year. There are many options for Advanced Search, all easy to find and use through drop down menus. Highly visible "Refine" and "New Search" buttons make it easy to add more limiters, or begin a new search. Advanced search limiting options include language, year, and peer-reviewed literature.

There are some interesting search options from the document record, including hotlinking to subject search, author profile, and a "seek" feature to automatically look for open access copies of references.

Additional hotlink items from the document might be worthy of consideration for further development, for example keyword search, or linking to the collection of works by one author, rather than just the author's profile.

Search options and overall usability compare favorably with other open access archives. E-LIS has more search options than the second largest LIS archive, DLIST. For example, the ability to search by language, the ability to retrieve documents by type or language from the full archive.

A few sample searches may serve to illustrate the strengths and areas for growth for E-LIS, in comparison with other search resources for LIS, primarily DLIST, the second-largest archive for LIS, as well as Wilson's, Library Literature with Fulltext, Library and Information and Science Technology Abstracts, the two primary resources for indexing of LIS literature. Metasearch tools for open access archives are also compared; Metalis, associated with E-LIS, the DLIST DL-Harvester, and OALster, a general open access archives search tool. The Directory of Open Access Journals is also compared.

An E-LIS simple search for "virtual reference" yields 39 records. The relevance of the results list is somewhat limited.

An advanced search for "virtual reference" as keyword yields a very relevant list of 18 documents.

Of the 18 documents, 12 are refereed. 6 are in English, while the results set includes documents in 4 other languages: French, Italian, Spanish, and German. Search results cover virtual reference services in Switzerland, the UK, Canada, India, and Italy.

E-LIS does not appear to support phrase searching. The difference between the simple search and the advanced keyword search is the fields which are being searched, separately, for the two words.

A DLIST basic search for "virtual reference", yields 6 results, 5 of which are relevant. All are English, and the majority are peer-reviewed articles.

The difference between the relevance of the results of the simple search appears to be that DLIST supports phrase searching, while E-LIS does not.

One item appears in both the E-LIS and DIST search results.

A Library Literature keyword phrase search for "virtual reference" yields 1,753 records, of which 737 are peer reviewed, and 134 of these are full text. Out of the first 50 records for fulltext documents, 49 are English and 1 German, indicating a strong English-language bias.

A Library and Information Science & Technology Abstracts (LISTA) keyword phrase search for "virtual reference" as keyword phrase search yields 490 results; further limiting to academic journals yields results of 109. Out of the first 50 records, 49 are English and 1 Italian, again revealing a strong language-language bias.

Subject Searching: the JITA Classification System of Library and Information Science

Subject searching is based on the ***JITA Classification System of Library and Information Science***. "JITA" is an acronym derived the first initial of the first names of the schema developers: José Manuel Barrueco Cruz, Imma Subirats Coll, Thomas Krichel, and Antonella De Robbio. JITA was developed for E-LIS from a merger of NewsAgentTopic Classification Scheme and the RIS classification scheme. Jasco says: " Instead of the often artificial and outdated language of classification systems and thesauri, JITA has classification terms with literary warrant from contemporary library and information science & technology papers".

In addition to offering basic and advanced search features, JITA allows E-LIS users to browse its collection using such a specialized classification scheme which includes 122 subject headings distributed in two hierarchical levels and subdivided in 12 areas or blocks.

Reliable connections among knowledge representation, information retrieval and lexical tools as classifications, lists of subject headings, thesauri, terminological collections and ontologies, are a necessity in the ever more pervasive world of networked knowledge-based activities.

Nevertheless the JITA classification scheme is not intended to be a comprehensive classification scheme, but to facilitate document retrieval through the archive's browsing facility.

Users in different settings, with different demands and expectations want to fulfill their information needs wherever information is available, cutting costs and times as much as possible.

JITA's objective is to provide a simple subject schema to categorise the majority of documents in the discipline.

It is divided into twelve blocks (categorised alphabetically from A-L), which have been created around the three following implicit (virtual) areas:

1. Theory and generalities (general level) This is divided into: theoretical and general aspects of libraries and information; information use and the sociology of information.
2. User-oriented, directional, and management functions (intermediate level) - socio-economic and legal issues are included here. This divides into: users, literacy and reading; libraries and information repositories; publishing and legal issues; management; industry, profession and education.
3. Objects, pragmatic issues and technicalities (on a specific level). This covers: information sources, supports and channels; information treatment for information services; technical services in libraries, archives and museums; housing technologies; information technology and library technology.

The twelve blocks are associated with letter codes:

- A. Theoretical and General Aspects of Libraries and Information
- B. Information Use and Sociology of Information
- C. Users, Literacy and Reading
- D. Libraries as Physical Collections
- E. Publishing and Legal Issues
- F. Management
- G. Industry, Profession and Education
- H. Information Sources, Supports, Channels
- I. Information Treatment for Information Services (Information Functions and Techniques)
- J. Technical Services in Libraries, Archives and Museums
- K. Housing Technologies, and
- L. Information Technology and Library Technology.

The JITA Classification scheme is open. Emma McCulloch and Dennis Nicholson, E-LIS editors for the United Kingdom, are working on further developments, with a focus on issues in terminology mapping within a digital library perspective. Further information about the JITA Classification scheme and its development can be found on the E-LIS website at <http://eprints.rclis.org/jita.html>

Metadata Harvesting Tools Comparison

Metalis is a harvesting tool associated with the E-LIS service, and which is featured on the E-LIS website. A Metalis search for “virtual reference” yields no records. Metalis is currently not supported or developed by E-LIS.

DL-Harvest

DLIST features a DL-Harvest tool, which harvests records from 14 archives relating to library and information science, including E-LIS, for searching. A DL-Harvest search for “virtual reference” yields 45 records. Relevance seems high. There is some duplication in the search results, which may be from just one archive (University of North Carolina). For example, the document “Reference Transaction Handoffs: Factors Affecting the Transition From Chat to Email Nora E Wikoff” with the handle <http://hdl.handle.net/1901/173>, appears twice; there are several other examples. This is probably a minor glitch, which results in a slight overstatement of the number of records retrieved.

OAIster

OAIster <http://oaister.umd.umich.edu/o/oaister/> is a union catalog of digital resources, allowing for cross-searching of over 10 million records from 730 contributing repositories, most of which are full-text, open access.

An OAIster phrase search for “virtual reference” yields 120 records. There is no option to limit to scholarly, peer-reviewed or refereed items. Results appear to be quite relevant. Out of the first

10, almost all are full-text, although one of the links is not working. E-LIS records, and records for a number of institutional repositories, are included.

An OALster search for “virtual reference” and “E-LIS” yields 17 results, very similar to the results of an E-LIS Advanced Keyword Search. Interestingly, it seems that OALster can perform a phrase search of E-LIS records, although E-LIS itself at present cannot.

Directory of Open Access Journals

A DOAJ journal search for “virtual reference” retrieves no results. An article-level search retrieves 4 results, all highly relevant, and all in English.

In summary, E-LIS has much strength for searchers, particularly browse features, robust advanced searching, and a strong subject classification system. Sample searches illustrate the E-LIS advantage in diversity of results returned.

E-LIS results sets are much smaller than comparable searches in Library Literature and LISTA. This disparity will likely decrease over time, with the rapid growth of E-LIS.

The advantages of cross-searching using metadata harvesting tools such as OALster are clear when compared with E-LIS alone. The number of records returned for an OALster search for “virtual reference”, at 120, is roughly comparable (in numbers, not necessarily the same documents) to the results retrieved for either Library Literature or LISTA, and far more than the 18 retrieved through E-LIS.

E-LIS would be well advised to eliminate the link to Metalis, since this is not being supported, and replace it with a link to OALster.

Price

E-LIS is an open access archive, free for searchers, and free for depositing authors.

When assessing the economics of open access initiatives, the key criterion is support rather than price.

As stated on the E-LIS website, E-LIS is “hosted by AEPIC team on machines of the Italian Consorzio Interuniversitario Lombardo per Elaborazione Automatica (CILEA). E-LIS relies on the voluntary work of individuals from a wide range of backgrounds and is non-commercial. There is neither funding nor interest in profiting from the initiative”.

The support of CILEA involves use of a server, and part time support from a technician, which is paid for by CILEA. The growing E-LIS will soon need its own server, for which CILEA has committed funds.

The bulk of the value added to E-LIS comes from voluntary contributions – the documents provided by authors, conference organizers, and journal publishers, and the voluntary contributions of time by the E-LIS Editorial Team. This is a combined volunteer / sponsorship model, and one that is working well for E-LIS.

Contract Options/ Features

The contract options of open access are unbeatable! E-LIS is accessible to anyone, anywhere, with an internet connection.

Authors' Rights

For authors, E-LIS does not request any transfer of copyright. It is up to authors to decide whether they can self-archive their works in E-LIS.

For authors who wish to both publish and self-archive their work in E-LIS, there are a number of options.

Where possible, it is advantageous for the author to investigate authors' rights prior to deciding where to publish. The Directory of Open Access Journals, or DOAJ <http://www.doaj.org/>, lists 71 fully open access, peer-reviewed journals in library and information studies.

Another option is to search the *Sherpa Romeo Publisher Copyright Policies & Self-Archiving*⁴ Site, which lists the policies of many publishers, before deciding where to submit your paper.

If it is not clear whether a journal allows self-archiving, ask! Many journals and publishers realize that they need to change their policies in light of open access, but have not done so yet. If a blanket policy allowing self-archiving is not yet available, an editor might be able to confirm permission for an individual article.

One way to clarify self-archiving rights is through the use of an Author's Addendum, such as the one made available by the Scholarly Publishing and Academic Resources Coalition (SPARC)⁵.

Preservation

A must for E-LIS will be the matter of preservation, in particular the implementation of preservation metadata policies. A key step in developing a preservation policy is to identify the types of material contained in a repository in terms of technical structure, or file formats (e.g. PDF, HTML). In the digital era, the outset for most new research and educational materials will be the institutional archive, or disciplinary cross-search repository, for this reason "It is important to build the concept of preservation from the outset" as suggested by JISC Circular 4/04, note 10)⁶.

Metadata designed for managing digital content over a long period of time is commonly referred to as *preservation metadata*, usually those metadata necessary to carry out documents, informs, describes and records a range of activities concerned with preserving specific digital objects contained in a repository. To date no repositories (including E-LIS) have a formal preservation policy, indeed preservation policy is being preceded by *de facto* policies on file formats and transformations without provision for acquiring source versions. The strategy for preservation should be determined by the nature and need of the repository, and should be driven by repository policy rather than the other way around. These are the full results and analysis from the survey by Steve Hitchcock, Tim Brody, Jessie M.N. Hey and Leslie Carr "Survey of repository preservation policy and activity"⁷.

For this reason Preserv was developed, *Preservation Eprints Services - Enabling long-term open access to materials in institutional repositories (IRs)*⁸, a JISC project investigating and developing infrastructural digital preservation services for institutional repositories which offers a tool integrated into the ROAR Registry of Open Access Repositories¹.

E-LIS participated in Steve Hitchcock's surveys and works in order to provide a *Preserv profile* available inside ROAR. *Preserv profiles* were produced by applying the PRONOM-DROID file format identification service from The National Archives⁹ to repository data from the Celestial OAI data harvester and presenting the resulting graphical view of a repository broken down by file formats through the ROAR user interface. The National Archives curates a database of file formats, PRONOM, with aim to identify repository content by using TNA's Digital Record Object

Identification (DROID) open source software, which can be downloaded and applied by any repository.

Moreover OpenDOAR, The Directory of Open Access Repositories <http://www.opendoar.org/>, has produced a useful and practical repository policies tool that helps build preservation policy on top of policies for metadata, data, content and submission. Its preservation policy definition form is especially perceptive for including provision for the repository to work with external partners. PRONOM-ROAR⁷ suggests a new perspective. On the one hand, it implements an ingest service based on the OAIS reference model for institutional archives built using EPrints software. On other hand, it adapt EPrints software to allow the collection and dissemination of preservation-oriented metadata to supplement the current bibliographic information. In such direction GNU EPrints version 3 released January 2007 introduces a number of features that will help support the preservation of digital objects stored in repositories, because it interacts with preservation services by providing features for complex-object export, recording the history of changes to a document, and preservation rights declaration. The new features implemented have been jointly developed with the Preserv project, with coding on the METS and Creative Commons (CC) licensing components by Preserv.

The following chart shows the breakdown of all **files** contained in E-LIS, based on an automated crawler. All files (apart from the abstract 'jump-off' page) were downloaded and then identified using the ***Pronom file format identification tool***.

Format	Total Files
Portable Document Format (1.3)	1775
Portable Document Format (1.4)	1531
Portable Document Format - Archival (1)	562
Unknown	425
Portable Document Format (1.5)	315
Portable Document Format (1.2)	311
Hypertext Markup Language	202
[No files found]	195
Microsoft Powerpoint Presentation (97-2002)	170
RealAudio Metafile	66
Hypertext Markup Language (4.0)	63
Portable Document Format (1.6)	49
Portable Document Format (1.1)	43
JPEG File Interchange Format (1.01)	32
Microsoft Word for Windows Document (97-2002)	26
Rich Text Format (1.0)	18
Hypertext Markup Language (4.01)	17
OLE2 Compound Document Format	16
ZIP Format	14
Extensible Markup Language (1.0)	9
Extensible Hypertext Markup Language (1.0)	7
Binary Interchange File Format (BIFF) Workbook (8)	6
GZIP Format	6
PostScript (2.0)	5
Hypertext Markup Language (3.2)	5
Portable Document Format (1.0)	4
Fixed Width Values Text File	3
Rich Text Format (1.5)	2
OpenDocument Presentation Format (1.0)	2
JPEG File Interchange Format (1.02)	2
Microsoft Word for Windows Document (97-2003)	2
OpenOffice Impress (1.0)	2

Exchangeable Image File Format (Compressed (2.2)	1
Microsoft Powerpoint Presentation (95)	1
OpenOffice Writer (1.0)	1

The above file format histogram gives an instant overview of the file formats contained in E-LIS
Total OAI Records: **5077** [Preserv Profile] - PDF/MS-Word: 86%

Conclusion

E-LIS is an open access archive for library and information studies, the largest such archive, and rapidly growing. With support for 22 languages and a volunteer editorial team from over 40 countries, E-LIS is an outstanding example of global cooperation, which is reflected in one of the strengths of E-LIS, the diversity of its content. E-LIS strengths also include a number of well-designed search features, robust yet user-friendly. Lack of phrase searching and pointing to a meta-archives search tool which is no longer supported are identified as areas for improvement. Best of all, E-LIS is completely free – for the reader, and for the depositing author.

Notes

1. COPPUL Animated Tutorials Sharing Project (ANTS)
<https://dspace.ucalgary.ca/handle/1880/43471>
2. ALPS sharelibraryresources wiki
<http://sharelibraryresources.pbwiki.com/>
3. Morrison, Heather. Dramatic Growth December 2006 & Predictions for 2007
The Imaginary Journal of Poetic Economics
<http://poeticeconomics.blogspot.com/2006/12/dramatic-growth-december-2006.html>
4. Sherpa Romeo Publisher copyright policies & self-archiving
<http://www.sherpa.ac.uk/romeo.php>
5. SPARC Authors' Addendum
<http://www.arl.org/sparc/author/addendum.html>
6. The project worked from February 2005 to January 2007 by following subjects: Southampton University (School of Electronics and Computer Science), The National Archives, The British Library and Oxford University (Library Services, Systems and Electronic Resources Service)
7. Brown, Adrian (2005) Automatic Format Identification Using PRONOM and DROID, The National Archives, Digital Preservation Technical Paper: 1, 17 September 2005