

Open source software based information services at CSIR-NAL

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Abstract: *R&D library and information centers play important role in fulfilling information needs of its scientists and technologists. With the advent of ICT, roles and services of Information centers and information seeking behaviors among its patrons shifted dramatically towards e-environment. Cost of the software tools available to implement web based information services is not affordable for libraries and information centers in developing countries. Best possible solution for this problem will be adopting open source based software tools in libraries. This paper highlights various electronic information services implemented using open source software at CSIR-NAL.*

Keywords: *Open source software, Content Management, Institutional Repositories, Web Gateways, Metadata Harvester, Data capture*

Introduction

The objective of R&D library and information centers is to support research by enhancing access to information through effective management of its resources and provision of a wide range of information services to researchers, scientists, and policymakers in their domain. The traditional roles of Library and information centers have been the collection, organization, preservation, and dissemination of intellectual outputs. With the advent of ICT, roles and services of Information centers and information seeking behaviors among its patrons shifted dramatically towards e- environment. In order to cope up with this shift many information centers especially in R& D institutes started adopting new technologies to cater their privileged patrons. It is well known fact that every year the cost of information resources increases by 10 to 20 percent and libraries face budget crunch. With insufficient budget, acquiring commercial tools to automate library services will be a difficult task for any library and information centers. The best possible solution for this crisis will be adopting open source tools and technologies to meet the requirement.

Open Source Software

Open-source software (OSS) is computer software that is available in source code form and the source code is distributed under an open-source license that permits users to study, change, improve and to distribute the software. Popular open source licenses are GNU General Public License (GPL), Common Public License 1.0, Simple Public License 2.0 and many more. Open source code is typically created as a collaborative effort in which programmers improve upon the code and share the changes within the community. Some popular open source softwares are Linux, Apache Web server, Sendmail, GNOME so on. Variety of open source tools is available for library and information centers operations and services (list is provided in table no. 1)

Open source software's List

Popular Open source tools & technologies available for Library and Information centers

Name of the tool	Purpose	URL
Koha	Library Automation package	http://www.koha.org
NewGenLib	Library Automation package	http://www.verussolutions.biz
Evergreen	Library Automation package	http://evergreen-ils.org/
OpenBiblio	Library Automation package	http://obiblio.sourceforge.net/
Emilda	Library Automation package	http://www.emilda.org/
OPALS	Library Automation package	http://www.mediaflex.net/index.jsp
Eprints	Institutional Repository	http://www.eprints.org/
Dspace	Institutional Repository	http://www.dspace.org/
Fedora Commons	Institutional Repository	http://www.fedora-commons.org/
Greenstone	Digital Library	http://www.greenstone.org/
iVia	Digital Library	http://ivia.ucr.edu/
VuDL	Digital Library	http://vudl.org/
Drupal	Content management system	http://drupal.org/
Zoomla	Content management system	http://www.joomla.org/
Wordpress	Content management system	http://wordpress.org/
OpenCMS	Content management system	http://www.opencms.org/en/index.html
impressCMS	Content management system	http://www.impresscms.org/
Open Harvester system	Metadata harvesting tool	http://pkp.sfu.ca/?q=harvester
PKP-OJS	Open Journal system	http://pkp.sfu.ca/?q=ojs
OpenACS	Open Journal system	http://openacs.org
SOPS	Open Journal system	http://www.scix.net/sops.htm
GAPworks	Open Journal system	http://developer.berlios.de/projects/gapworks/
Ambra	Open Journal system	http://ambraproject.org/index.html
DPubS	Open Journal system	http://dpubs.org/
HyperJournal	Open Journal system	http://www.hjournal.org/

Library & Information centers Functions/Services

Success of research and development mainly depends on the literature or information availability and accessibility in that domain. Library and information centers play the vital role in delivering *right information to right user at right time* which is most essential for any research by providing various services. Broad library and information services are given below

1. Circulation service
2. E-resources : E-Books, E-Journals, E-patents, E-Standards, Databases etc
3. Literature search service using bibliographic database, citation database etc
4. Digital library
5. Institutional repository
6. Resource sharing: Union catalogues, Inter library loan
7. Document delivery service
8. Orientation programmes for in-house users
9. Current awareness services, forthcoming events, daily news headlines, and recent additions on/the Intranet

10. Selective dissemination of information
11. Electronic journal content-page services
12. Reference and referral services
13. Reprographic services
14. News clipping service
15. Web resource gateway/portal

CSIR-NAL

National Aerospace Laboratories (NAL), a constituent of CSIR is India's pre-eminent civil R & D establishment in aeronautics and allied discipline and has made very significant contributions to all major Indian aerospace programmes. It is spearheading the effort to design and develop small and medium size civil aircrafts in India. NAL is well equipped with modern and sophisticated national facilities like the Wind Tunnel Centre and the computerized full scale fatigue test facility. The laboratory has developed three major aircrafts, HANSA, the first composite trainer aircraft, SARAS, a fourteen seater multi role light transport aircraft, and NM5, a five seater aircraft

NAL-ICAST services

The Information Centre of NAL (ICAST), is an ISO-9001: 2000 Certified Centre along with its parent organization NAL. ICAST with its state-of-the-art expertise, infrastructure and services caters to the information requirements of the Indian aerospace community in particular and the engineering and technical personnel in general. ICAST is well known for its aerospace collections of books, journals and specifically technical reports from NASA, DLR, ONERA, NLR, ARL and UTIAS. Its major services are

- Automated library services with OPAC
- Access to e-journals through journal gateway (includes CSIR-DST consortia journals)
- Union catalogue of CSIR holdings
- Virtual access to various databases such as WoS, Aerospace database, Derwent, ASTM and BIS standards
- AIAA meeting papers
- Institutional repositories
- AeroInfo gateway
- CSIR Harvesting services
- Document delivery services (Digital + Print)

OSS based services at ICAST

CSIR-NAL Institutional repository

NAL-IR: The Institutional Repository at NAL is the digital archive of the research output of its scientists and technologists. Since the inception of NAL during 1959, till date the R&D staff have published more than 20,000 research publications in various forms. ICAST initiated setting up of its own repository during 2003 using, the then most popular open source software Greenstone Digital Library (GSDL), developed at University of Waikato, NZ. More than 300 papers at abstract level along with few full text contributed by the scientists at NAL were uploaded, but were made accessible through NAL's intranet. During 2004, the work progressed rapidly with the adoption of the open source software GNU Eprints 2.0 for archiving and managing the digital collections. The knowledge base of NAL-IR covers Journal Articles, Conference Papers, Technical reports, Presentation/lectures, Project documents, Patents, Thesis, Images and Book chapters. In the year 2010 NAL-IR upgraded to GNU Eprints 3.0 with enhanced

features. Records can be retrieved either by browsing various options like by author, division, subject, date and document type or by simple and advanced search facilities. NAL-IR has been ranked with in 500 among the world's top institutional repositories as per Sigmatics ranking.

Technology employed to create NAL-IR is as follows

- Fedora 9.0 Operating system
- Eprints 3.0 (IR tool)
- MySQL database
- Apache web server

NAL-IR Home Page

AeroInfo (Drupal):

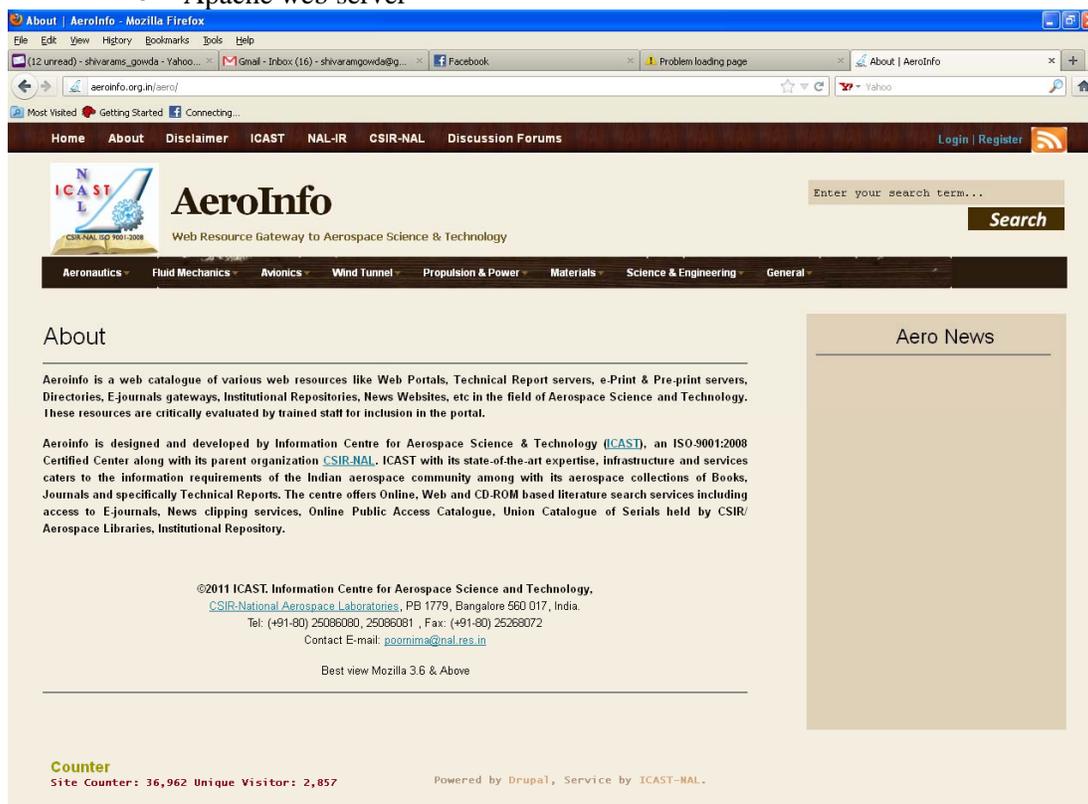
With enormous amount of information available on the web, users are finding it more and more difficult to retrieve the relevant information. There are various tools like search engines, subject directories, subject gateways so on which are available to users to discover and retrieve the relevant information required for their research. Subject gateways are gaining importance as they are designed with help of subject specialist for his expert advice on subject details and an Information specialist who is best equipped with the knowledge of organizing of information for convenient retrieval.

Aeroinfo is a web catalogue of various web resources like Web Portals, Technical Report servers, e-Print & Pre-print servers, Directories, E-journals gateways, Institutional Repositories, News Websites, etc in

the field of Aerospace Science and Technology. These resources are critically evaluated by trained professionals for inclusion in the portal. It is a browsable directory of online resources, described and arranged by subject and allows the end-user to search the resources. Subject classification has been done in consultation with subject experts working at the laboratory to meet the requirements of NAL's ongoing projects and related participating aerospace institutions research areas. The metadata fields to describe each web resource are evolved after detailed discussion with subject experts, ICAST members and end users.

Technology employed to create NAL-IR is as follows

- Fedora 9.0 Operating system
- DRUPAL 6.X Content management tool
- MySQL database
- Apache web server



AeroInfo Gateway Home Page

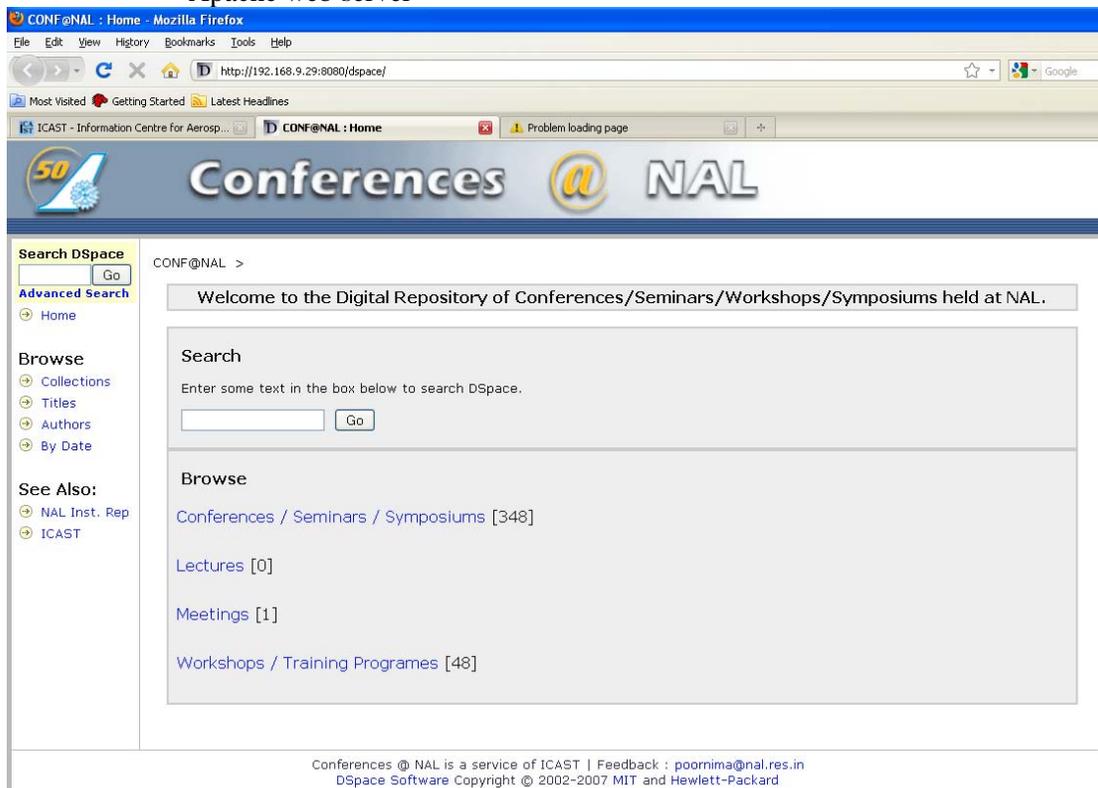
Conference papers (Dspace)

Research demands continuous learning and keeping abreast of latest developments from scientist and technologist in the domain. This happens through reading, attending conferences, workshops, seminars, brain storming activities etc. conferences and workshops play an important role in manpower developing, provides platform to interact with similar interested social group and exchange their ideas and thoughts. Realizing significance of these activities CSIR-NAL encourages all divisions to host conferences and workshops in their respective domains. In the golden jubilee year of CSIR-NAL hosted 20+ events like conferences, workshops seminars etc in all its research areas. Invaluable wealth of literature has been

created and shared among the interest group of all domains. NAL-ICAST is able to capture this valuable literature and archived on Intranet. This collection comprises of conference papers, presentation files used in conference by delegates, meeting minutes etc. collection can be browsed by content type, titles, author or creator etc and allows simple and advanced search facilities. Popular Dspace repository software has been used for the purpose

Technology employed to create NAL-IR is as follows

- Fedora 9.0 Operating system
- Dspace Repository software
- MySQL database
- Apache web server



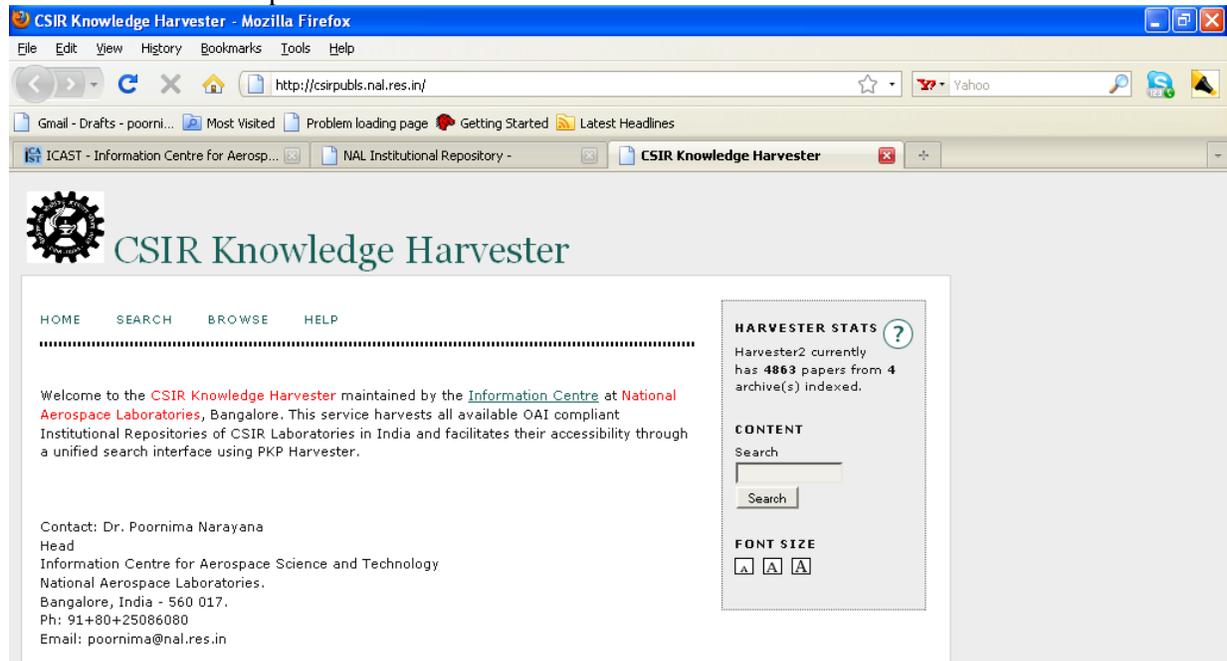
Conferences@NAL Home Page

CSIR- Knowledge Harvester

CSIR being the key player in Indian science research has taken various initiatives in enabling open access to its research publications. An expert committee has been constituted by Director General CSIR to come out with recommendation regarding CSIR Open Access Policies. One of the important recommendations of the committee was each CSIR laboratory should establish institutional repository and make their all publication available in the repository based on the copyright issues. CSIR harvester, a service by NAL-ICAST harvest metadata of all CSIR laboratories institutional repositories. The main objective of this harvester is that users will get all CSIR publication in one window till metadata level and for full text they will be automatically redirected to respective Institutional repository. Collection can be browsed by Laboratory and simple and advanced search facilities are provided.

Technology employed to create NAL-IR is as follows

- Fedora 9.0 Operating system
- PKP harvester
- MySQL database
- Apache web server



CSIR Knowledge Harvester Home Page

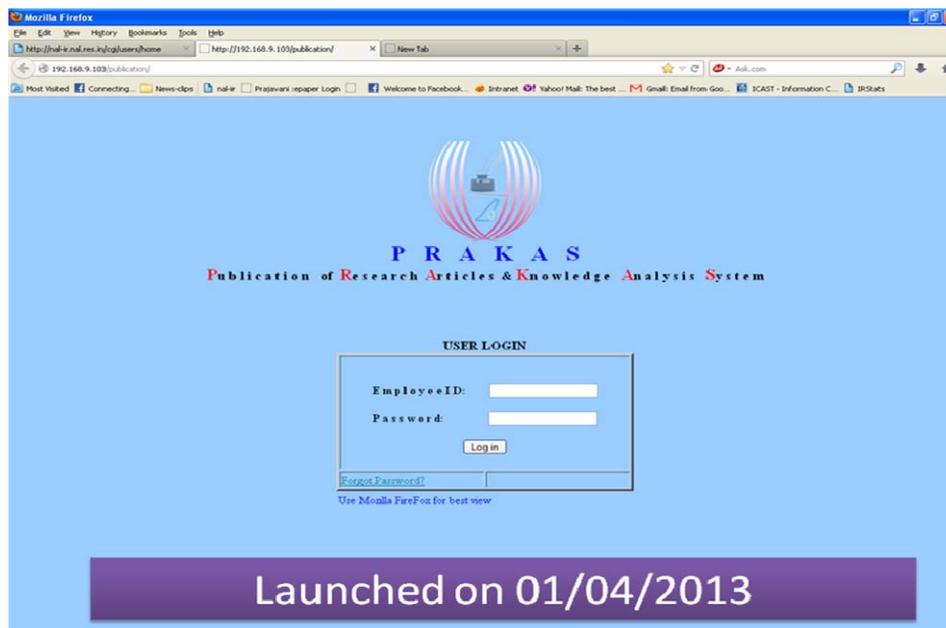
CSIR-NAL Publication Archive

PRAKAS: is conceptualized and designed by ICAST with two main objectives. Firstly to capture published and unpublished literature (gray literature) for centralized NAL archive (digital format) and to deposit permissible (unclassified or open) literature on NAL Institutional Repository (NAL-IR), thus enhancing CSIR-NAL visibility among the aerospace community. As per CSIR open access mandate ICAST has taken several initiatives to sensitizing scientists and technologists towards open access publishing and **PRAKAS** is one similar initiative in this direction to facilitate articles archiving process.

Secondly to assess the usage of resources subscribed by NAL-ICAST by analyzing references given in both published and unpublished literature which helps ICAST to focus on subscribing high-quality useful information resources for NAL-ICAST users and spend allocated budget judiciously

Technology employed to create NAL-IR is as follows

- Fedora 14.0 Operating system
- php scripting language
- MySQL database
- Apache web server



PRAKAS Home Page

Kanaada-OJS (Kannada Scientific Magazine published by CSIR-NAL)

CSIR-NAL major research laboratory proactively engaged in disseminating research findings in local language Kannada with an objective of reaching out rural school children. It encourages School children to read and contribute science articles to its annual kannada magazine Kanaada publishing from last 37 years. NAL-ICAST has initiated open archive of all articles published in Kanaada magazine from its inception using popular open source OJS-PKP (Open Journal System-Public Knowledge Project) tool.

Conclusions

The benefits of open access, open source softwares are numerous which includes lower costs, great accessibility, and better prospects for long-term preservation of scholarly works. ICAST-NAL has made best efforts in incorporating these to provide better services to its patrons.

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