

e-Granthalaya- Transforming Traditional Library to e-Library with Automation and Networking of Government Libraries

e-Granthalaya is a library management software facilitating automation of in-house activities of library as well as member services. This web-based and cloud-ready application is used online by the member libraries for data entry, return of issues and other key member services. The Software is hosted on NIC Cloud as SaaS model in cluster mode with centralized database for group of libraries.



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Libraries are social institutions that play a vital role in the over-all development of a society. Libraries form the major source of information services to the citizens. In the modern education system, libraries have become an integral aspect to support learning and research activities. Currently, almost all of the government organizations have their library, which functions as the resource centre for improving efficiency of employees' duty.

It is estimated that, out of over a lakh libraries in our country, only few are fully automated. Most of the libraries are either partially automated or yet to start the automation process. National Informatics Centre (NIC) has thus taken an important step to computerize government libraries by developing *e-Granthalaya* software and implementing nation-wide . This helps the citizens to access library resources in public domain using the power of latest technologies.

E-GRANTHALAYA PROJECT

Under the *e-Granthalaya* project of NIC, the following two applications were developed:

1. E-GRANTHALAYA

e-Granthalaya is an integrated library

management software, which has been implemented in 4500 libraries successfully.

2. EGLIBNET

Union catalog of government libraries hosted on NIC Cloud and accessible at <http://eglibnet.gov.in> -In this, over 54.41 Lakh copy catalogs of 558+ Government Libraries are hosted.

e-Granthalaya is a Library Management Software that facilitates automation of in-house activities of the library as well as member services. The table in Fig-1 shows the release of various versions of the software so far. The Current version of software, *e-Granthalaya* Ver.4.0 - is a web-based, cloud ready application and is used online by the member libraries for data entry, issue-return and other member services. *e-Granthalaya* Ver.4.0 is hosted on NIC Cloud as SaaS model in cluster mode with centralized database for group of libraries. Advantages of this version are; non-requirement of installation of the application locally and maintenance free at user end as both the application as well as database are hosted on NIC Cloud.

OPEN API INTEGRATED

- RFID
- ISBN Downloader
- News API
- ILL API

Ver.	Release Year	Technology / Platform	DBMS	Edition
1.0	2003	VB6 / ASP/ Non-UNICODE	SQL Server 7	Public Libraries Edition
2.0	2005	VB6 / ASP / Non-UNICODE	SQL Server 2000	Govt. Libraries Edition
3.0	2007	VB.NET/ ASP.NET 2.0/ UNICODE	SQL Server 2005	Network Edition
4.0	2015	ASP.NET 4.0/ JQUERY/ AJAX/ UNICODE	PostgreSQL 9.4	Enterprise Edition/ Web Based/ Cloud Ready App

Figure-1

S.No	Domain specific features	Product-oriented features
1	Web-based solution	Cloud- ready application with mass deployment for government libraries.
2	Application work-flow as per Govt. libraries	Multi-Tenant application
3	Adheres to libraris tandards such as AACR2/ MARC	Single-Signup application
4	Z39.50 built-in client search	Well Scalable with more VMs / Memory/ Processor as per requirements
5	Export/ import data in common formats (Excel/ CSV/ MARC21/ MARCXML/ ISO: 2709)	Integration with PostgreSQL– an Open Source DBMS (Other DBMS may also be used)
6	Search module with Basic/ Advance/ Boolean features	Shared cataloging with catalog download facility through API from Internet
7	Generate Bibliography in AACR2 format	User configurable components CAS/ SDI Services for Library members
8	CAS/ SDI Services for Library members	Online Help and user support thorough dedicated web site/ mail forum / user discussion forum / Feedback mechanism and Help Desk
9	Full-txt News clipping service	Hosting on Cloud with adequate resources Inter-Library Loan API
10	Digital library integration with e-Books Manager	Compliance with Library Technology and ICT prevalent in Libraries
11	Inter-Library Loan API	Supports multi-tasking, multiple screens in same/ different browsers can be opened to do various related tasks quickly
12	Compliance with library technology and ICT prevalent in libraries	Well-written documentation and user manual

KEY MODULES

- Database Administration
- Library Administration
- Master Data
- Books Acquisition
- Books Cataloging
- Circulation
- Serials Management
- Micro-Document Manager
- Library Budget
- Staff Search
- OPAC

STANDARDS COMPLIANCE

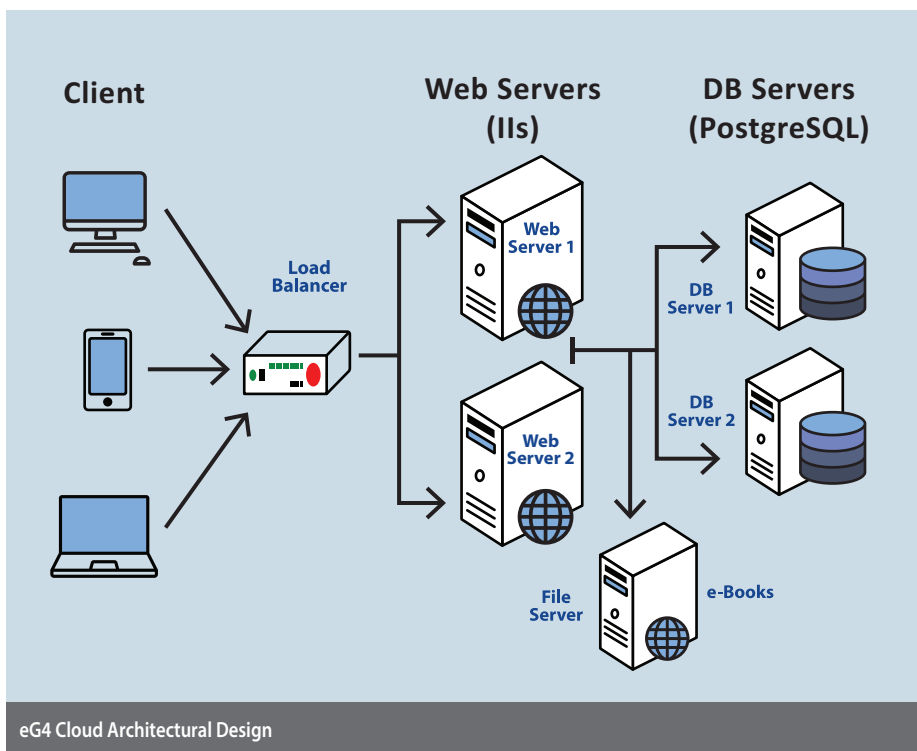
- MARC21
- AACR2
- UNICODE
- SRU/ SRW
- Z39.50
- NCIP / SIP2 for RFID
- Barcode
- Smart Card
- E-Books viewer
- XML based web services
- W3C Standards

TECHNOLOGY AND ARCHITECTURE

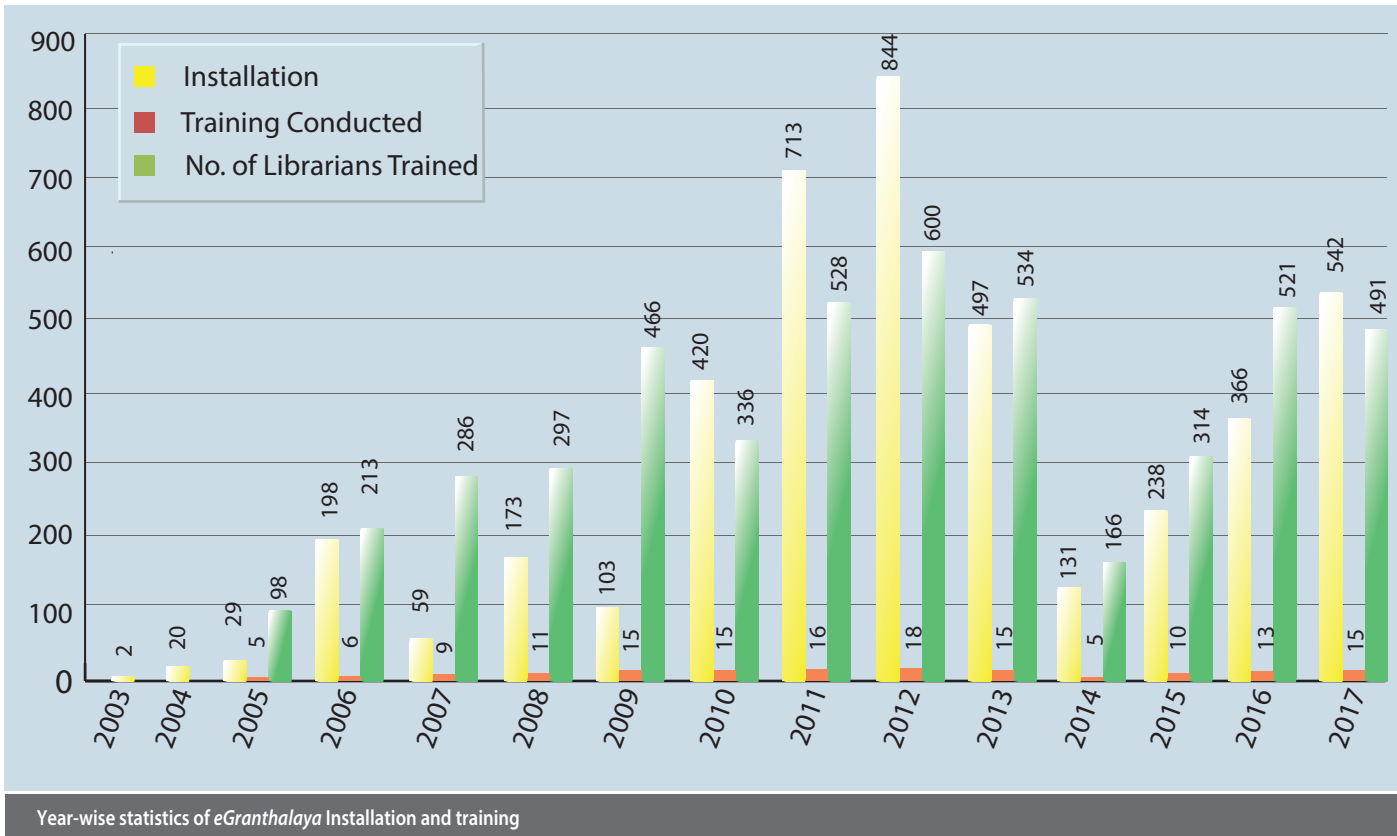
Originally, *e-Granthalaya* was developed using proprietary technologies, however, keeping in view of the usefulness, economy and popularity of Open Sffource technology, efforts are being made to migrate the application to Open Source in phased manner. In the first phase, the back-end database of the application has been migrated from MS SQL Server to PostgreSQL – an Open Source DBMS running at LINUX platform.

The front-end of the application will also be migrated to open source platform in the near future.

Presently, the front end of the application is developed in ASP.NET 4.0 and running in Windows environment over .NET Framework 4.0.



eG4 Cloud Architectural Design



TECHNOLOGY USED

- Front-End in ASP.NET 4.0 (Front end can connect to any type of DBMS – PostgreSQL/ SQL Server)
- Back-end in PostgreSQL 9.3/ 9.4 with auto backup implementation
- Interface is based on latest www technology such as CSS/ JavaScript/ JQuery with AJAX enabled controls, etc.

CLOUD RESOURCES

- Two web servers (Windows VM) with Load Balancer (LB)
- Two database servers (LINUX VMs) – RHL
- One file server (Windows)

STATUS

- Four versions have been released during the last 15 years
- Software has been implemented successfully in 4,500 libraries
- 154 Training programs conducted in the country, trained over 4000 librarians

- 820 Libraries are on Cloud, generated 42 Lakh holdings record belonging to 26 lakh books catalog records
- In Union Catalog – 54 lakh catalog records generated which belong to 551 libraries, accessible in public domain with Inter-Library Loan API

STRENGTH OF THE APPLICATION

- Government ownership
- Product stability as four versions have been released during last 15 years
- Standard tool for library automation
- Built-in data migration service from old version to new version
- Training and technical support by professionals
- First cloud based implementation in the Country
- Shared cataloging
- Union Catalog as a by-product

- Most used application for library automation
- Roll out services available from NIC/ NICS empanelled agencies

SUMMARY

With the passage of time, *e-Granthalaya* has become a valuable service from NIC for Government libraries. With the adoption of *e-Granthalaya* in government libraries, a network of automated libraries may be enabled to develop a well an integrated “single window access system” in the Country, another valuable service from National Informatics Centre.

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