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Development of Digital Assets Management Software for Research Centre Imarat

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ABSTRACT

Digital libraries have become integral part of day to day library activities. The ease and fast access to information in digital environment has brought drastic changes in information seeking behaviour of the users. This paper broadly covers digitisation issues related to open source software (OSS) their merits and demerits. The need and role of digital assets management (DAM) system and in-house development of DAM software for taking digitisation to various divisions in Research Centre Imarat is also discussed.

Keywords: Digital library, digital assets management, digitisation, open source software, Greenstone digital library

1. INTRODUCTION

How you gather, manage, and use information will determine whether you win or lose[1]. This is really true since every activity in any sector, be it education, research, industry, healthcare, government and so on, is based on information technology today. Currently, a large number of libraries are providing access to information by using digital libraries in their day to day activities. Digital libraries are providing enormous opportunities for creation of scientific data and knowledge by way of R&D labs, universities, government organisations and corporate sector. No wonder digital libraries pose tremendous challenges both for organisations and library professionals.

This paper broadly covers digitisation issues related to open source software (OSS), their merits and demerits. It also covers need and role of digital assets management system (DAM) and in in-house development of DAM software to serve as dual purpose software for library applications and also to meet requirements of document management system for RCI.

2. CURRENT TRENDS IN OSS

Digital libraries are organised collections of digital information. During the last decade OSS have played pivotal role in development of digital libraries in India. The OSS is a practical description of software and believes that by making the source code available to users the software can be improved upon.

Some of the advantages of using OSS are:

- Rights to use without discrimination
- Source code availability
- OSS permits free modification and redistribution
- No annual license fees and restriction on the number of users[2]

Some of the drawbacks observed in using OSS are:

- Lack of formal training and support that a in-house software package offers
- Installing and maintenance of OSS generally requires a higher level of technological sophistication
- OSS is also not known for ease of use as the focus is usually on functionality[3]
- Documentation manuals of OSS are not user friendly and to consider OSS to be free of cost is a misconception.[4]

The RCI has implemented Greenstone software and DAM software for building digital library collections.

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Hence the comparison is restricted to OSS and in-house software only. It is generally observed that OSS is not completely free of cost because of additional and indirect costs, namely, procurement of additional software, training, and documentation support.

3. RESEARCH CENTRE IMARAT INITIATIVES

The Research Centre Imarat (RCI) library has started development of digital library of missiles during last seven years. It has a rich collection of 500 made-digital objects and 1000 CD-ROMs. It has used Greenstone software for building and distributing library collections. It has categorised missile literature broadly into six areas, namely, lecture notes, conference papers, current topics, institutional repositories, ebooks and technical reports.

Keeping in view the disadvantages of OSS as stated above and the need to carry the benefits of digitisation to all divisions in RCI has led to in-house software development.

4. FEATURES OF DAM

The DAM can be defined as management, organisation, and distribution of digital assets from a central respository[5]. The main aim of DAM is creation of digital information exchange environment that is secure and accountable.

Thus, DAM leads to decision making framework that extends time horizon and provides proper platform for utilisation of broad range of assets[6].

4.1 Need and Role of DAM

The DAM consists of set of technologies and processes designed to manage ever growing digital assets storage, retrieval, and reuse of the same.

The need and role of DAM are:

- Growth of digital assets is in leaps and bounds
- Improves returns on assets
- Decreases costs and increases productivity
- Improves decision making
- Provides platform for reuse of digital assets.

Thus, DAM serves as an efficient process consisting of information generation, information processing and reuse of digital assets by a large number of widely dispersed users.

4.2 OBJECTIVES OF DAM

Keeping in view the need and role of DAM in RCI, a study was conducted to see the suitability of OSS software for DAM applications. For this purpose various features of DSpace, Fedora, and Greenstone were studied. It is found DSpace and Fedora to be complex in implementation and academically-oriented and Greenstone is not designed for meeting the requirements of DAM system[7]. The key features of the in-house software development are as follows:

- Software is developed using SQL server and Asp.net
- It is web-based and runs on support of IIS web server
- IIS 7.0 plays vital role in achieving better performance, reliability, scalability, and security of websites
- SQL server is a fully featured RDBMS that offers a variety of tools for database development, maintenance, and administration[8]. The main components of SQL server include Enterprise Manager, Query Analyser, SQL Profile, Service Manager and Data Transformation Services (DTS).
- Enterprise manager is the main administrative console for SQL server installation and Query Analyser offer easy methods for performing queries against SQL server database.
- The SQL profile provides a window into the inner working of the database and the role of Service Manager is to control the SQL server.
- The DTS plays a vital role for import and export of the data between SQL server and a large variety of other formats. Import and export wizard is commonly used data transformation applications.
- The .NET framework provides environment for building, deploying and running web applications. Asp.net is a server side scripting technology that enables scripts (embedded in webpages) to be executed by internet server.

Table 1 shows the main differences between the Greenstone and DAM software implemented in RCI and Figure 1 shows architecture of DAM software.

Table 1. Main differences between Greenstone and DAM

S. No.	Greenstone	DAM
1.	Developed for library applications only	Developed for digitisation needs of various divisions in RCI
2.	Number of steps in adding digital objects are four	Number of steps in adding digital objects are two
3.	Plugins have to be chosen	Plugins are automatic
4.	Training is compulsory and involves payment	Training needs are met in-house and thus free of cost

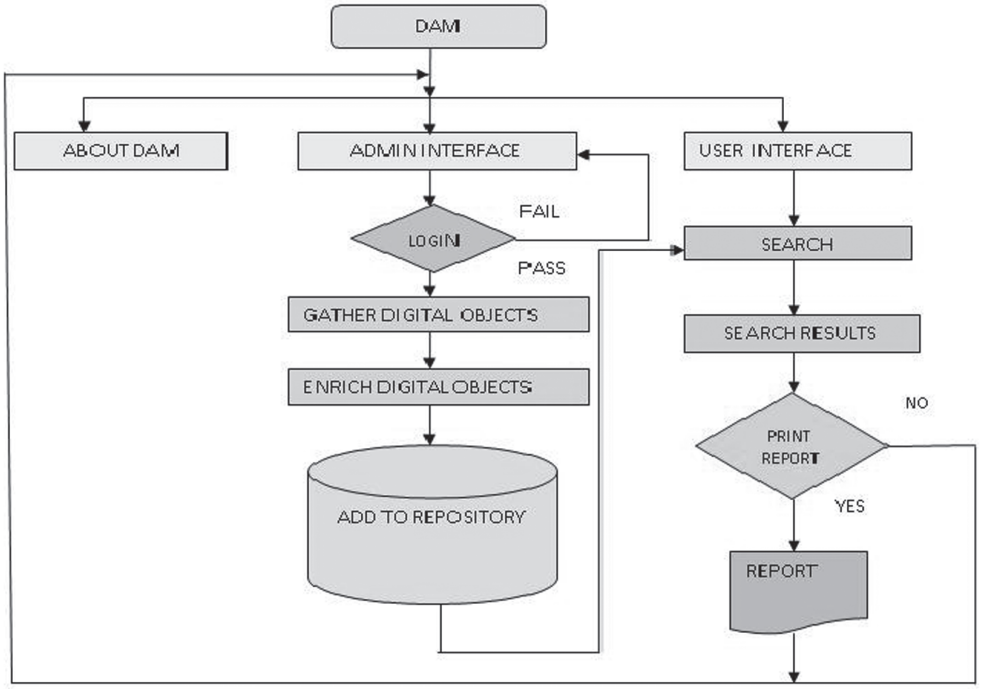


Figure 1. DAM architecture.

4.3 Advantages of DAM

The key advantages of DAM software are:

- Serves as integrated platform providing access to born-digital (CDs/DVDs) and made-digital objects on intranet
- CDs/DVDs can be accessed by nested search
- Ability to perform search by author, title, keyword and category-wise
- Supports Boolean search
- Choice of plugins is automatic
- Creation and addition of digital objects is made simple
- Supports text, html, word, pdf document, pictures, audio, and video
- No need to depend on outside agency for software installation, maintenance, and upgradation of software.

To illustrate the importance of DAM software for providing the required information in a suitable way, Figs. 2-5 show some of the enunciated screen visuals which are self-explanatory.

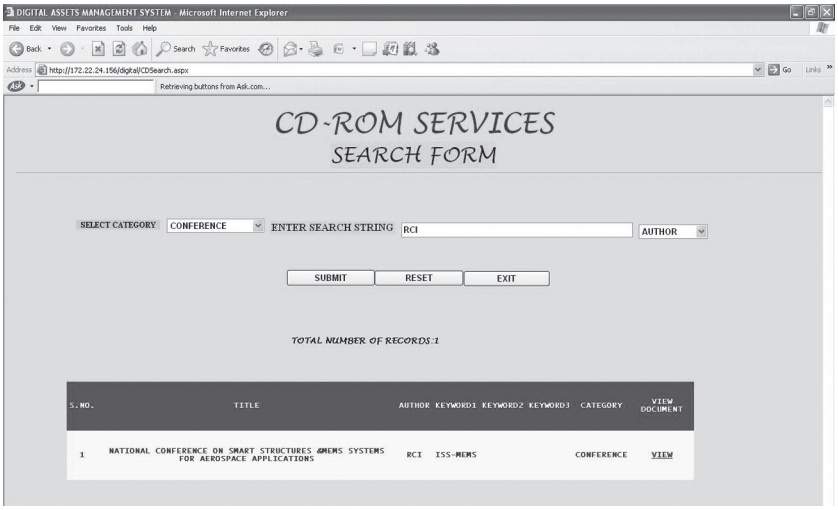
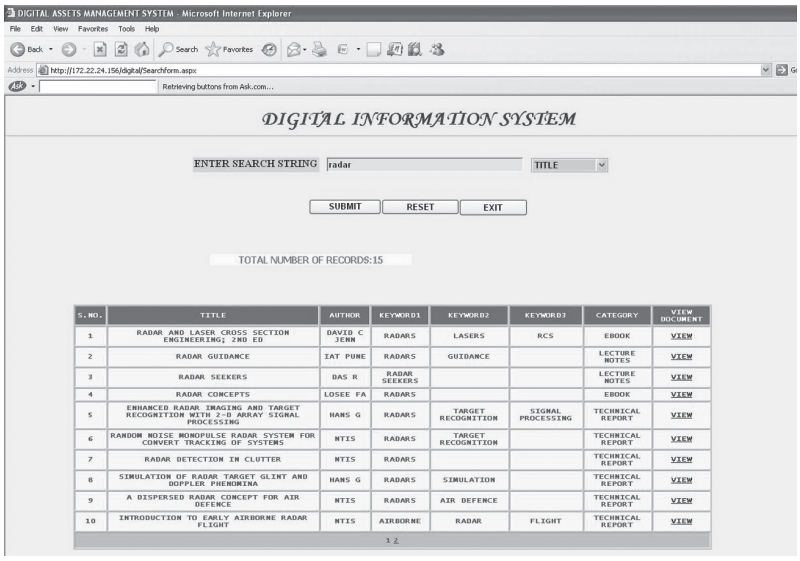


Figure 2. Category-wise search of CD-ROMs.



S.NO.	TITLE	AUTHOR	KEYWORD1	KEYWORD2	KEYWORD3	CATEGORY	VIEW DOCUMENT
1	RADAR AND LASER CROSS SECTION ENGINEERING; 2ND ED	DAVID C JENN	RADARS	LASERS	RCS	EBOOK	VIEW
2	RADAR GUIDANCE	IAT PUNE	RADARS	GUIDANCE		LECTURE NOTES	VIEW
3	RADAR SEEKERS	DAS R	RADAR SEEKERS			LECTURE NOTES	VIEW
4	RADAR CONCEPTS	LOSEE FA	RADARS			EBOOK	VIEW
5	ENHANCED RADAR IMAGING AND TARGET RECOGNITION WITH 2-D ARRAY SIGNAL PROCESSING	HANS G	RADARS	TARGET RECOGNITION	SIGNAL PROCESSING	TECHNICAL REPORT	VIEW
6	RANDOM NOISE MONOPULSE RADAR SYSTEM FOR CONVERT TRACKING OF SYSTEMS	NTIS	RADARS	TARGET RECOGNITION		TECHNICAL REPORT	VIEW
7	RADAR DETECTION IN CLUTTER	NTIS	RADARS			TECHNICAL REPORT	VIEW
8	SIMULATION OF RADAR TARGET GLINT AND DOPPLER PHENOMINA	HANS G	RADARS	SIMULATION		TECHNICAL REPORT	VIEW
9	A DISPERSED RADAR CONCEPT FOR AIR DEFENCE	NTIS	RADARS	AIR DEFENCE		TECHNICAL REPORT	VIEW
10	INTRODUCTION TO EARLY AIRBORNE RADAR FLIGHT	NTIS	AIRBORNE	RADAR	FLIGHT	TECHNICAL REPORT	VIEW

1 2

Figure 3. Title-wise search of made-digital objects.

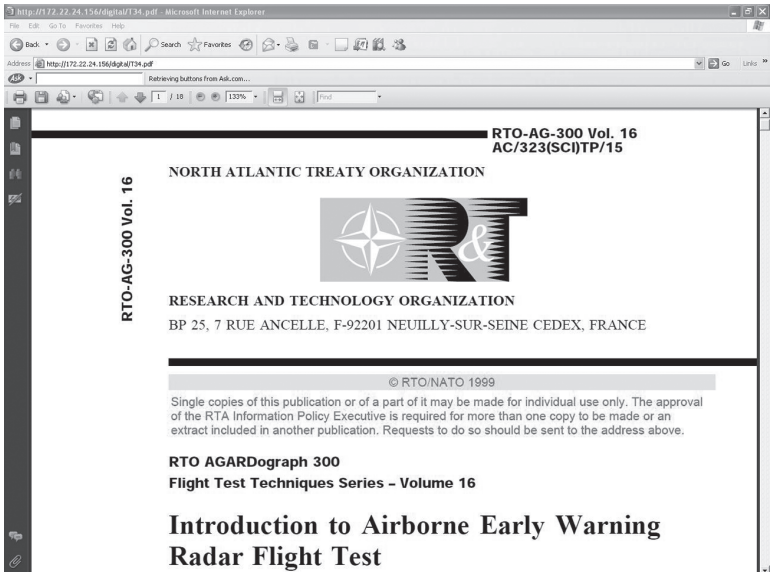
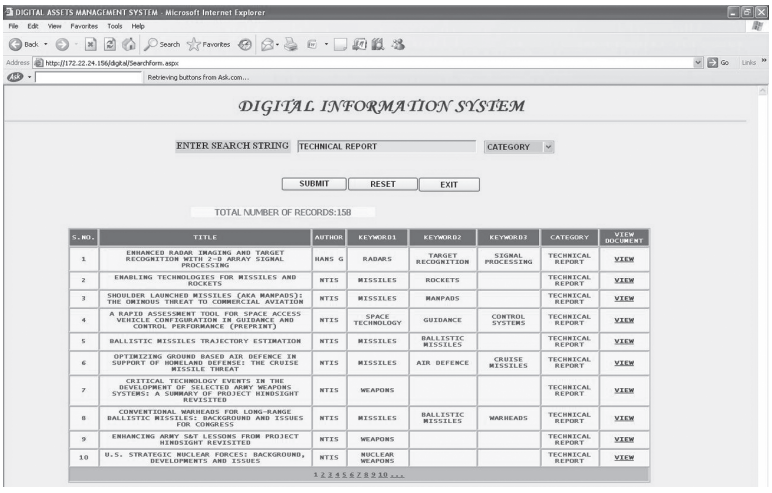


Figure 4. Full-text view of digital object.



S.NO.	TITLE	AUTHOR	KEYWORD1	KEYWORD2	KEYWORD3	CATEGORY	VIEW DOCUMENT
1	ENHANCED RADAR IMAGING AND TARGET RECOGNITION WITH 2-D ARRAY SIGNAL PROCESSING	HANS G	RADARS	TARGET RECOGNITION	SIGNAL PROCESSING	TECHNICAL REPORT	VIEW
2	ENABLING TECHNOLOGIES FOR MISSILES AND ROCKETS	NTIS	MISSILES	ROCKETS		TECHNICAL REPORT	VIEW
3	SHOULDER LAUNCHED MISSILES (AKA MANPADS): THE OMINOUS THREAT TO COMMERCIAL AVIATION	NTIS	MISSILES	MANPADS		TECHNICAL REPORT	VIEW
4	A RAPID ASSESSMENT TOOL FOR SPACE ACCESS VEHICLE CONFIGURATION IN GUIDANCE AND CONTROL PERFORMANCE (PREPRINT)	NTIS	SPACE TECHNOLOGY	GUIDANCE	CONTROL SYSTEMS	TECHNICAL REPORT	VIEW
5	BALLISTIC MISSILES TRAJECTORY ESTIMATION	NTIS	MISSILES	BALLISTIC MISSILES		TECHNICAL REPORT	VIEW
6	OPTIMIZING GROUND BASED AIR DEFENCE IN SUPPORT OF HOMELAND DEFENSE: THE CRUISE MISSILE THREAT	NTIS	MISSILES	AIR DEFENCE	CRUISE MISSILES	TECHNICAL REPORT	VIEW
7	CRITICAL TECHNOLOGY EVENTS IN THE DEVELOPMENT OF SELECTED ARMY WEAPONS SYSTEMS: A SUMMARY OF PROJECT HINDSIGHT REVISITED	NTIS	WEAPONS			TECHNICAL REPORT	VIEW
8	CONVENTIONAL WARHEADS FOR LONG-RANGE BALLISTIC MISSILES: BACKGROUND AND ISSUES FOR CONGRESS	NTIS	MISSILES	BALLISTIC MISSILES	WARHEADS	TECHNICAL REPORT	VIEW
9	ENHANCING ARMY S&T LESSONS FROM PROJECT HINDSIGHT REVISITED	NTIS	WEAPONS			TECHNICAL REPORT	VIEW
10	U.S. STRATEGIC NUCLEAR FORCES: BACKGROUND, DEVELOPMENTS AND ISSUES	NTIS	NUCLEAR WEAPONS			TECHNICAL REPORT	VIEW

1 2 3 4 5 6 7 8 9 10 ...

Figure 5. Category-wise search of made-digital objects.

5. CONCLUSIONS

The DAM system provides the foundation for complete control of digital assets. The in-house software development is a small step to meet requirements of RCI. It is presently deployed in RCI library and various divisions of RCI. The implementation of DAM by various organisations aligned with a larger vision can provide cost savings, revenue generation, and better decision making. Lastly, librarians should make a thorough study of their environment, opportunities and constraints before deciding between open source software and in-house software development.

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