Chapter 6  Summary of Findings and Suggestions

6.1 Introduction

The assessment of maturity of software is an important area in the general software sector. The field of OSS also applies various models to measure software maturity. However, measuring maturity of OSS being used for several applications in libraries is an area left with no research so far. This study has attempted to fill the research gap. Measuring maturity of software contributes knowledge on its sustainability over the long term. Maturity of software is one of the factors that positively influence adoption. The investigator measured the maturity of DSpace software using Woods and Guliani’s Open Source Maturity Model-2005. This chapter gives the
summary of the major findings of the study, areas of applications of the result of the study and suggestions for further research.

6.2 Findings

The major findings of the study are organized under two broader categories: DSpace software environment and DSpace software features.

6.2.1 DSpace Software Environment

1. DSpace is the category leader among the OSS for DLs.
2. DSpace is adopted in 117 countries in the world representing six continents.
3. The institutional and individual leadership of DSpace is identifiable.
4. DSpace has a strong leadership base and they are composed of experts from the field of computer science and library and information science.
5. Institutionally, DSpace was developed by MIT Libraries and Hewlett Packard Labs in 2002.
6. The Andrew W. Mellon Foundation supported the DSpace project.
7. The DuraSpace organization is providing leadership to DSpace.
8. The DSpace team members actively participated in the many forums and mailing lists of DSpace and they provided significant contribution for the popularization of the software by attending conferences and presenting papers.
9. DSpace team members were positive to user queries.
10. DSpace software maintained a professional culture throughout its various stages of development.
11. The relationship between DSpace developers and users is found to be healthy.

12. DSpace Community involves Steering Group, Leadership Group and Project Members, Committers, Emeritus Committers, Contributors, Community Advisory Team, Ambassadors, Members, Sponsors and Users.

13. Several Universities and institutions support DSpace project.

14. DSpace has a regular release history having 12 releases over fourteen years beginning from November 2002 to January 2015.

15. DSpace project maintains a website that is highly informative and all-embracing. The home page provides links to 34 categories of contents. The site is simple and confirms to the degree of brevity and clarity expected of a mature software. The site contents are licensed under Creative Commons.

16. The release of easy to use installation packages/documentation for the users is very part of DSpace project.

17. DSpace reduces the potential for commercial conflicts as all the prerequisite software for installation of DSpace belong to OSS.

18. DSpace has a total number of six mailing lists namely DSpace-tech, DSpace-general, DSpace-devel, DSpace-changelog, DSpace-release and DSpace-tickets.

19. DSpace maintains separate mailing list for users and developers

20. DSpace retains documentation for all versions of the software.

21. The total downloads for DSpace exceed 3 lakhs from 2002 to December 2014 with an average of 27000 downloads per year, 2200 per month and 75 per day.

22. DSpace mailing list is archived from 2002 onwards.

23. DSpace maintains a structured FAQ

24. DSpace keeps online documentation for all versions of DSpace.
25. DSpace documentations are organized by version.
26. DSpace user manuals contain sections that describe the installation of the software.
27. The understating of the historical milestones of DSpace code development is possible as all the source codes of all versions of DSpace are kept with GitHub code repository.
28. Third party support options are available for DSpace.

6.2.2 DSpace Software Features

1. Majority of the modules of DSpace is developed in Java programming language.
2. DSpace is available both in binary and source code forms.
3. DSpace is multiplatform compatible. It can be installed both on UNIX-like operating systems (Linux, HP/UX, Mac OSX, etc.) and on Windows platform.
4. DSpace incorporates new features and tools in every new release. And new release of DSpace is brought when there are significant additions to the existing features.
5. DSpace follows modularity in code design.
6. The basic architecture of DSpace is composed of three layers: application layer, business logic layer and storage layer.
7. The application layer contains components that communicate with the world outside of the individual DSpace system.
8. The business logic layer handles the content of the archive, users of the archive (e-people), authorization, and workflow.
9. The storage layer is responsible for physical storage of metadata and content.
10. DSpace maintains checklists for accepting code from code contributors to ensure quality.
11. DSpace follows a naming convention as per Java programming.
12. DSpace facilitates various testing practices.
13. DSpace maintains integration with hardware and software having current industry standards.
14. DSpace ensures the contents being easily and effectively indexed by major search engines.
15. DSpace conforms to the indexing guidelines recommended by Google Scholar.
16. DSpace uses the same prerequisite software over the years.
17. DSpace provides facility to upgrade from any previous version to the new version.
18. DSpace supports a number of standards and protocols for the exchange, preservation and use of digital data. It includes Open Archives Initiative (OAI), Metadata Harvesting (OAI-PMH), Open Archives Initiative Object Reuse and Exchange (OAI-ORE), Simple Web-service Offering Repository Deposit (SWORD), Web Distributed Authoring and Versioning (WebDAV), OpenSearch, OpenURL, Rich Site Summary (RSS).
19. DSpace is shared and distributed under Berkeley Software Distribution (BSD) license.
20. DSpace uses standard software as prerequisites from Java to Perl.
21. DSpace satisfies the requirement of all the fifteen elements of Woods and Guliani’s Open Source Maturity Model-2005.
22. DSpace achieved the highest score for elements under product criteria, use criteria and integration criteria of Woods and Guliani’s Open Source Maturity Model-2005.
23. Based on the examination of the descriptive elements and the scoring elements of Woods and Guliani’s Open Source Maturity Model-2005, DSpace is a mature OSS.

6.3 Applications of the result of the Study

The result of the study can be applied in the selection of DSpace for DLs. The study can be used to gain in-depth knowledge on DSpace. The result of the study can also be used to develop understanding on the application of maturity measures to OSS in libraries.

6.4 Suggestions for further research

1. This study can be conducted on other open source software used in libraries such as Koha, EPrints, Greenstone, NewGenLib etc.

2. The maturity of OSS being used in libraries can be made by using other maturity measurement models

3. Further exploration on the factors influencing the adoption of open source software in libraries with special reference to the perception of maturity of software.